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Also

Whenever in this publication "man," "men," or their related pronouns appear, either as words or parts of words (other than with obvious reference to named male individuals), they have been used for literary purposes and are meant in their generic sense.

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Have you learned to communicate effectively? Do you want to improve on your present skill? If you are or aspire to be a manager, it is essential that you develop this skill. A manager can't "afford to leave home without it."

Before focusing on the new (second) edition of *Skill in Communication: A Vital Element in Effective Management*, Defense Systems Management College, let's go back in time to the early days of civilization and man's early attempts to communicate. It sets a background of man's early recognition of the need to communicate effectively. The story is fascinating.

The Beginning

From the first day humans walked on planet earth, there has been a need for effective communication. Early attempts to communicate were probably by using a few undefined gestures—non-verbal communication. At some time, people made hideous screeches and howls attempting to transmit thoughts. This was the beginning of speech, as we know it. This led to listening—an art many of us never learned to use, but could, with practice. Next, came marking the ground, and carving and painting on rocks and walls of caves—first attempts at writing. These latter forms became more successful as the alphabet came into existence, and papyrus, parchment, and paper became the medium to use. Although early hieroglyphics used in ancient Egypt had to be interpreted by a few, when the alphabet was invented messages could be read by many. This was the dawn of reading.

Our spoken and written language has changed through the years. The language we speak is determined by where we are born and grow up. According to Frederick Bodmer, "a child grows up to speak or to write the language used in the home or at school." Children born in multilingual countries grow up using two or more languages, and almost no one can claim, based on a rational basis that "he is congenitally incapable of becoming a linguist."[1]

The Present

We consider ourselves relatively sophisticated communicators. This may not be the case. If we analyze the various facets of communication, we will see there is much to learn. When we consider some of the basics, we can identify our need to improve our communication abilities.

What is communication? It is the passing of information and understanding from one person to another. It involves, as a minimum, transmitting the message and receiving it. After the sender (transmitter) passes information and understanding to the receiver, the knowledge of its effect on the receiver is passed back to the sender in the form of feedback.

Often, feedback is not verbal in nature or directly observed. Therefore, the receiver's facial expressions or bodily gestures provide a basis for judging the success or failure of the sender's message.

The sender's efforts to communicate will result in one of three effects, in terms of the receiver's behavior: a desired change, an undesired change or no change. Communicating is successful when it results in a desired change in the receiver's behavior. Communicating is not successful when it results in an undesired effect. Communication has not been achieved when there is an absence of any recognizable effect on the receiver's behavior.

Some form of feedback lets the sender know how his efforts to communicate affected the receiver and whether to modify the messages or let it stand as is.

Barriers

Students of communication recognize the words we use are a source of strength or weakness in effective communication. Unfortunately, the words we use do not always have commonly understood meanings. Some words are ambiguous and they lead to communicational problems.

Other barriers to communication in organizations, not based completely on the words we use, are:

—Time Pressure. We tend to use time pressure as an excuse for not communicating with others; however, we must recognize that time is a real factor affecting the opportunity to communicate.

—Filtering. Occurs when the sender makes a biased choice of the information he is going to send.

—Premature Evaluation. This occurs when the receiver makes a quick evaluation of the message based on either excessive or insufficient input.

—Failure to Listen. This barrier occurs when the listener fails to pay attention to the factual and emotional content of the message. Either the factual or the emotional will predominate; however, the receiver may overlook one in favor of the other.

—Psychological Distance. Psychological distance (such as between the engineering and the manufacturing organization) is sometimes exaggerated by unwarranted use of status symbols.

Principal Subjects Covered in Book

The following comments are identified with the chapter to which they pertain in the second edition of the book.

Chapter I. *Introduction.* Communication is defined and communication milestones through the ages are identified.

Chapter II. *The Communication Process.* Communication is a complicated, two-way process. This chapter identifies and describes the principal facets of the process.

Chapter III. *Writing Skills.* A highly developed and very complicated aspect of communication—writing skills—is dealt with in this chapter. The basic steps in preparing a proposal, report, staff paper, or article for publication are set forth. The "polishing" process and judging the effectivness of the final product are discussed.

Chapter IV. *Speaking Skills.* Part of every manager's time is devoted to the presentation of plans and ideas. This chapter discusses presentation strategies, organization of thoughts, language, delivery, and visual and other presentation aids.

Chapter V. *Audio and Video Presentation Skills.* Today, more communications of an informational nature are transmitted by audio recordings and video tapes than ever before. The recordings and tapes are used before sophisticated audiences; therefore, the presenter should know the "rules of the game." This chapter discusses the rules—those required for effective presentations.

Chapter VI. *Non-Verbal Communication Skills.* In person-to-person communications the messages are sent at two-levels simultaneously: verbal and non-verbal. Actions sometimes speak so loudly that the spoken words are lost. In this chapter, the elements of non-verbal communication are placed in focus: facial expressions, eye contact, tone of voice, body language, positioning in groups, and others.

Chapter VII. *Listening Skills.* This chapter focuses on the receiver—the one who provides feedback to the sender. Good listening requires understanding the message received. Accordingly, some practical suggestions for effective listening are presented. In addition, barriers to effective listening are pointed out.

Chapter VIII. *Reading Skills.* Efficient reading is defined. Techniques for improving your reading rate are discussed along with the barriers to efficient reading. How to make a decision to read or not to read something is included in this chapter.

Chapter IX. *The Importance of Questions.* Questions play a vital role in effective communication. Questions most helpful in improving the communication process are discussed. Probing and confrontational questions are highlighted.

Chapter X. *Communication Barriers.* The principal barriers to effective communication, and how to overcome them, are included here. The need for feedback is emphasized.

Chapter XI. *Communicating Within the Organization.* Communication channels are important in the development of any organizational structure. The formal and informal communication processes are described, as is the "grapevine" (unofficial) process. Further, some good approaches to solving communication problems are presented.

Chapter XII. *Conducting Successful Meetings.* Meetings are essential and can serve as an effective method of communication within an organization. The process and problems of planning and running meetings are included in this chapter. The role of the chairman is given special attention.

Chapter XIII. *Role of Technology in Communication.* The way people communicate, seek information, and obtain intelligence is changing radically. Some devices/techniques being used (such as the computer, telephone, radio, television, FAX machine, and tele- and video-conferencing) are discussed.

Chapter XIV. *Communicating Effectively as a Manager.* This chapter is devoted to the importance of communication to management success, and indicates that effective managers send clear, concise, accurate, and undistorted messages. Further, this chapter indicates that managers must be good message "receivers" and tuned-in to non-verbal messages, as well as to oral and written messages.

Chapter XV. *Summary.* The final chapter highlights the important facets of the communication process. Examples of the major purposes of interactive communication are included. Finally, the spotlight is placed on what the future holds for us relative to communicating effectively.

Final Thoughts

When a communication problem arises, or the need to improve your facility in communication becomes apparent, the second edition of this book should provide helpful and pertinent information. Although it was never the intention of the Defense Systems Management College to provide an exhaustive treatment of the subject of effective communication, it was intended that this book provide sufficient information to be responsive to the communicative needs of program management and other management personnel; students, faculty, and staff at the College; and members of the general community.

Copies of the book will be issued to students in DSMC courses. Other people may obtain copies of the book from the U.S. Government Printing Office (GPO). As of this writing, the order number and the cost of a copy of the book sold by the GPO have not been determined.

Endnote

1. Frederick Bodmer, "The Loom of Language," (New York: W. W. Norton and Company, Inc., 1944).

Professor Acker is a senior member of the research staff in the Department of Research and Information at the Defense Systems Management College. Much of the material in this article will be added to the second edition of his widely acclaimed book Skill in Communication: A Vital Element in Effective Management *planned for publication in 1990.*

CONTRACTING AUTHORITY: WHO NEEDS IT? WHO WANTS IT?

Lieutenant Colonel Curtis R. Cook, USAF
Captain George Champlain, USAF

Sometimes the truth hurts. The Department of Defense has essentially no generic, large-scale engineering capability. Contractors conceive, design, develop, and produce every major weapon system in the inventory. Program managers have but one path to success, and that is through the contracting officer

The Federal Acquisition Regulation (FAR) gives sole authority to enter into contracts on behalf of the government to the contracting officer. Yet the program manager, not the contracting officer, is responsible for the overall success of the program.

In most cases, the contracting officer is not even in the program manager's direct chain of command. Program managers typically work in a matrix organization, where the classical single chain of command structure is abandoned in favor of a multiple command structure (Davis and Lawrence, 1977:3). Authority is split between the functional division with its emphasis on support activities, and the project team with its emphasis on program success (Cleland, 1984:260). This complicates the program manager's task—how can he or she "motivate" the contracting officer to do what the program manager wants done?

As most program managers would probably agree, it isn't always easy, or even possible, to get the contracting officer to move in the direction or at the speed the program manager wants. These feelings have been expressed in a number of ways, but some of the more common (and publishable) ones include the following: "Why doesn't the program manager have contracting officer authority?" "The world would be much simpler if the program manager could direct contractors to accomplish program goals." "It would sure be easier to keep the program on track if the program manager didn't have to go through the contracting officer for every little thing."

These comments express a general concern among program managers that contracting officers are not adequately supporting program goals. A 1983 study by Naval Sea Systems Command produced similar findings. The study sought to determine the nature of the conflict between contracting officers and program managers. The Navy report contained the following quotations from command executives about contracting officers: (Sherman, 1987:82).

> The contracting officer is not well enough informed on the technology involved in the acquisition. He doesn't understand the ball game.
>
> The contracting officer delays the process. For example, he holds up the procurement request for additional justification when the sole source is obvious.
>
> The contracting officer holds too much authority, considering most of the negotiated issues directly impact the program.
>
> The contracting officer attempts to extract dollars from the contractual agreement, even though it is established that the entire project is underfunded.
>
> The contracting officer is slow in his reaction to changes.

The Study

To verify whether this feeling exists among practicing Air Force program managers, and to determine what corrective action might be appropriate if the condition does exist, the authors conducted a study of program directors and contracting officers in Air Force Systems Command (AFSC). Specifically, the study sought to answer these questions: Who should have contracting authority—program managers or contracting officers? What impact would shifting contracting authority to program managers have on contract compliance, program management efficiency, organizational conflict, and relations with the contractor? What action could or should be taken to improve contracting support of programs if it is perceived to be unsatisfactory?

A written survey of all program directors and procuring contracting officers (PCOs) in AFSC was conducted in May 1989 by the authors. The directors surveyed were those in charge of major weapon systems (54 colonels and generals); the contracting officers, 310 altogether, were those designated by AFSC as PCOs. The response rate was high for both groups: 48 program directors and 216 PCOs returned completed questionnaires. The survey consisted of

TABLE 1. DIRECTOR PROFILE

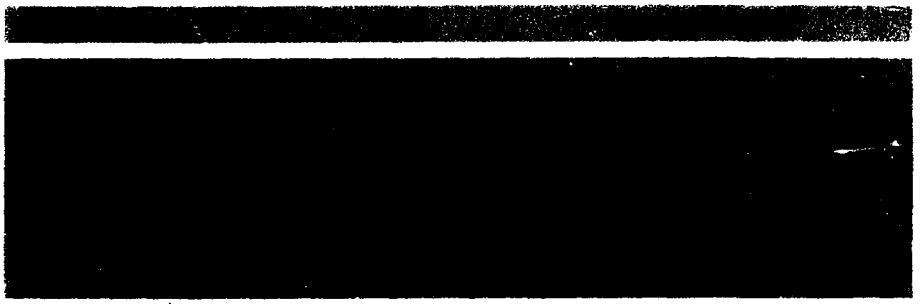


FIGURE 1. EDUCATION LEVEL OF PCOs AND DIRECTORS

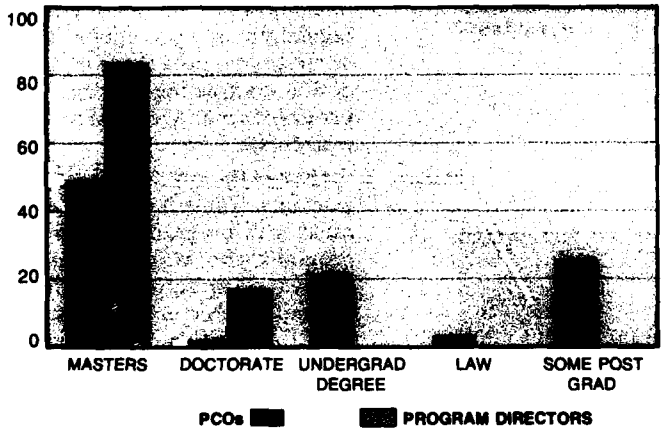
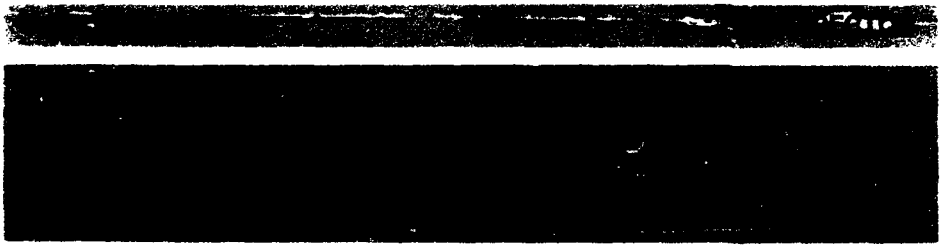


TABLE 2. DIRECTOR PROFILE (con't)



34 questions, including a request for comments. Participants were asked to indicate their agreement with statements given, based on a seven-point Likert scale. The responses were analyzed and are presented below.

What is the profile of a "typical" program director and contracting officer? Tables 1 and 2, and Figures 1 through 3 provide part of the answer.

Every PCO and director had at least a 4-year college degree. It is striking that 16.7 percent (8 of 48) of the program directors had doctoral degrees, and the remainder had master's degrees—quite impressive.

The field of study for both groups is shown in Table 2. The preponderance of business degrees among PCOs and engineering degrees among directors is noteworthy. One cause for conflict between contracting officers and directors may be due to this difference in educational backgrounds (to the extent that engineers see the world differently from business or other non-technical "types").

FIGURE 2. PCO EXPERIENCE

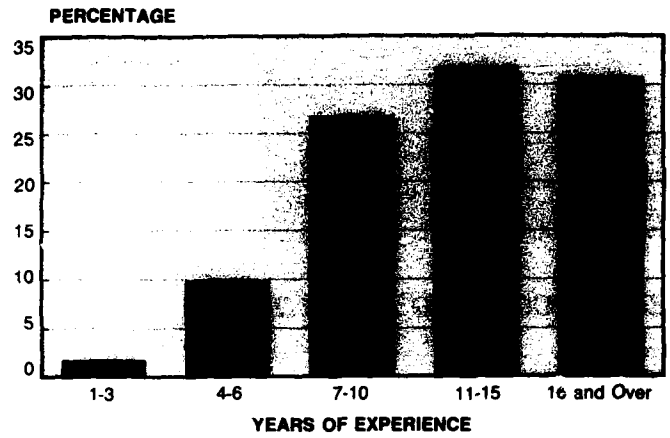


FIGURE 3. DIRECTOR EXPERIENCE

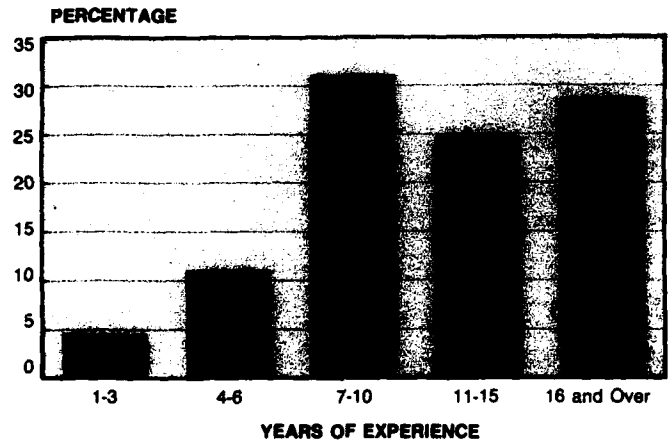
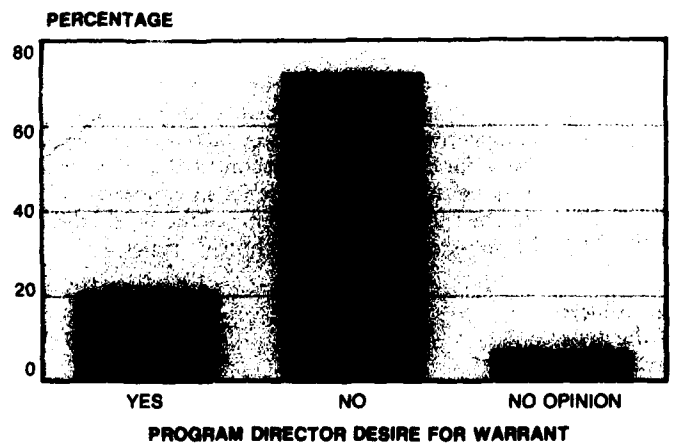


FIGURE 4. DIRECTORS DESIRE FOR WARRANT



The experience level of the defense acquisition work force has been called into question by the Packard Commission and others (President's Commission, 1986:5-6). Figures 2 and 3, however, show that within AFSC, both groups are very experienced.

The most surprising finding was the small number of directors who actually wanted contracting authority. With all the discussion of the lack of authority to carry out their considerable responsibilities, only 10 of the 48 directors said they wanted a contracting officer warrant, as shown in Figure 4. In their written comments, most directors stated they simply didn't have the expertise or the time to handle contracting chores, with its myriad laws, regulations and procedures. (It is very interesting to note that virtually none of the contracting officers said that program managers should have warrants!)

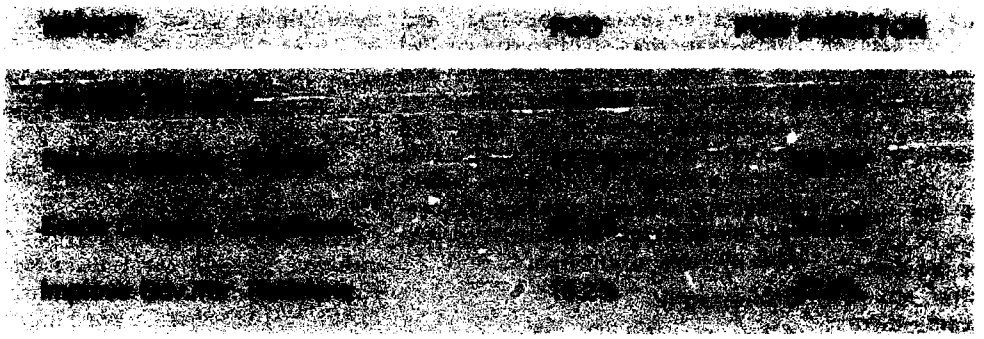
Despite the low number who wanted warrants, Table 3 shows that a large number of program directors did feel program office efficiency could be increased, organizational conflict reduced, and contractual relations improved if they had contracting authority. They simply did not have the time to do the contracting and manage the program. In addition, directors felt that having the authority would not erode contract compliance (many commented that compliance would be improved if they had a warrant).

Contracting officers, on the other hand, felt just the opposite. Most striking is their feelings that contract compliance would be severely eroded if program directors had contracting authority.

These differences are interesting. In their written comments, an overwhelming majority of PCOs stated that they act as the check and balance system between program directors and prime contractors in the sense that they prevent the two from getting "too close." Not a single program director, however, commented on the necessity or presence of such a regulating influence.

Judging from the differing opinions on these key issues, it is no wonder that a certain amount of conflict exists between program managers and contracting officers. The question remains, however, whether that conflict is detrimental to program success.

TABLE 3. IMPACT OF SHIFTING AUTHORITY TO PGM DIRECTORS



Conclusion

The matrix organizational structure appears to work well in the complex environment of defense acquisition, despite a moderate level of conflict between program directors and PCOs. Most directors recognized the high degree of knowledge, training, and expertise required to effectively exercise contracting authority, as shown by the following program director comments:

> In my opinion, most program directors do not have the training to be PCOs, and should not be warranted.

> I believe program directors are not knowledgeable or experienced enough to get or have a warrant. But most importantly, it would be a tremendous burden on them and a potential for abuse due to conflicts which arise daily.

Rather than exercise contracting authority, a large number of directors suggested another, more reasonable, alternative—that PCOs should work directly for them, as opposed to being matrixed:

> The issue is not who has the warrant; the issue is who does the PCO work for. I want a trained, professional PCO working for me, not for DCS/Contracts! I have been a program director with a PCO working for me, and a director with the PCO working for DCS/Contracts and matrixed to me. I much prefer the former; it was more efficient, more productive, and more responsive.

Program directors want adequate contracting support, not warrants. How do PCOs feel about the prospect of contracting authority in the hands of the program manager? In one word—opposed. The PCOs were strongly against program directors having any contracting authority. Almost every PCO commented that the check and balance system built into defense acquisition (via the matrix organization) works well and is vital to the integrity of the weapon systems acquisition process. The following comment from a PCO is typical of many others:

> If you give a program director a contracting officer warrant, you take away the check and balance of the system and allow too much authority in the hands of one individual.

Most PCOs were also strongly opposed to working directly for the program director. As one PCO put it:

> Contracting authority (for PCOs) should be increased. At the present time, contracting officers have a lot of responsibility, but very little actual authority. From my experience, contracting authority should not be in the program office, and contracting officers should not work directly from the program director.

In the area of experience and education, the findings of this report appear to contradict those of the Packard Commission. The Packard Commission characterized the acquisition work force as undertrained, undereducated, and inexperienced (President's Commission, 1986:5-6). The Packard Report was challenged in a 1987 study of contract managers in the National Contract Management Association. In that study, Cook found the 23,000-member NCMA population to be well-educated, experienced, and exceptionally well-trained in contracting areas (Cook, 1987). The study did not address the qualifications of program managers.

The current study supports Cook's findings. Air Force program directors and PCOs are both highly educated and experienced. All 48 program directors surveyed had at least master's degrees, and 8 held doctorates. Among the PCOs, all had at least undergraduate degrees, about half had master's, and seven held law degrees.

The experience level of both groups was also impressive, as shown in Figures 2 and 3. Among PCOs, 62 percent had more than 11 years acquisition experience (31 percent had more than 16 years experience), while 53 percent of the directors also had more than 11 years (29 percent had more than 16 years). A great majority—90.2 percent of PCOs and 84 percent of program directors—had at least 7 years acquisition experience.

The notion that program directors should have contracting authority is not popular with either group. Contracting officers like the matrix structure, with the PCO reporting to the functional contracting chief. Their comments seem to reflect a fear that program directors would use direct supervisory authority to try to coerce them into "breaking the rules."

Program directors were nearly unanimous in their opinion that PCOs should retain contracting authority. Most simply want more, or better, support to keep their programs on track. They also want a direct input to the PCO's performance report to keep the PCO's priorities aligned with their own. The following comments summarize these points.

> A PD doesn't have the time or the education to be a PCO, or the chief engineer, or the director for program control, etc.—that's why he has a team—there are no conflicts if there is teamwork. Every 0-6, 0-7, 0-8 PD will establish effective teamwork or he will not be a PD for long! 36
>
> The problem is not where the warrant resides, it is too few qualified PCOs.
>
> I don't believe it's a matter of who has contracting authority as much as it is the lack of PCOs, and the enormous bureaucracy to get something on contract that hinders the acquisition process. Program offices should have organic contracting capability, including PCOs, to keep priorities aligned and require PCOs to identify with program priorities. The Deputy for Contracting should be policy and technical assistance....The issue is aligned priorities.

This study asked program directors and contracting officers what they thought about vesting program directors with contracting authority. A healthy response rate showed that AFSC acquisition professionals care deeply about the topic and, as might be expected, most respondents provide written comments. Program directors and PCOs agree that the warrant should stay with the contracting officer, but disagree on where the PCO should be placed in the organization.

One consistent theme voiced by directors and PCOs was the frustration both felt with the bureaucratic federal procurement process. While that topic was not directly addressed by this study, procurement reform has been explored in great detail by various commissions throughout the years. The current effort—the Defense Management Review—is once again investigating ways to streamline the acquisition process. Whether it will succeed in reducing the irritating administrative reviews, approvals, and unnecessary steps so often commented on by both program directors and PCOs remains to be seen. All survey participants agreed on one thing—the matter of the placement of contracting officer authority is irrelevant unless something is done to reduce the current bureaucratic roadblocks to sensible systems acquisition.

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The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

DABBLING IN THE DAB PROCESS

Captain Margaret B. Clemens, USAF

The Joint Tactical Information Distribution System (JTIDS) Defense Acquisition Board (DAB) IIIA was completed successfully September 7, 1989. Preparation began formally in January 1989, 8 months before the DAB; planning for the acquisition strategy and testing had been underway longer.

As the Headquarters Air Force Systems Command action officer, I gained insight into the DAB process by observing it as applied to JTIDS. There had been much Office of the Secretary of Defense attention to streamlining: Yet, the following lessons-learned illustrate how arduous, bureaucratic and time-consuming the DAB process still is. These observations, from my perspective, (*not representing the views of the Air Force*) are divided into three main areas: documents, process and JTIDS issues. Specific examples are not intended as accusations but as illustrations to help people in the process and people improving the process.

Documents

The Acquisition Strategy Report (Competitive Alternative Sources) (ASR(CAS)), the Cooperative Opportunities Document, and the Common Use Alternatives Statement (all required by DODI 5000.2) are submitted before the DAB; however, these contain information pertinent to determination of the appropriate acquisition strategy required long before the DAB. I recommend these documents be submitted as part of the acquisition plan.

The ASR(CAS) is a cost analysis of alternative acquisition strategies. As currently required, it is submitted before the DAB, concurrent with the Independent Cost Analysis (ICA). Because consistency of the cost numbers is so important, the ASR(CAS) cannot be finalized until after the final ICA review at the Office of the Secretary of Defense. For JTIDS, this was long after the document was due to the Air Staff. I recommend that the program office cost estimate should be acceptable as a basis for the ASR(CAS).

The Test and Evaluation Master Plan (TEMP) has become an all-encompassing program management plan versus a master test planning document. Information on all program aspects was required to be included in the TEMP until this document was two inches thick. Numerous test planning working groups discussed how available resources could be allocated to meet everyone's demands. There was little compromise between individuals and the TEMP is *still* a subject of controversy.

The Manpower Estimate Report was submitted just within its suspense, as "no impact"; it would have been late had there been an impact. Additionally, requests for reports from the other Services were initiated late, not until June, and it appears the unwritten policy now is that reports will always be "no impact." We know we are not going to get additional manpower authorizations, yet we don't give them up. This entire effort is simply a paperwork exercise.

Numerous documents (Acquisition Program Baseline (APB), ASR(CAS), Decision Coordinating Paper (DCP), ICA Report, Program Briefing) all are submitted separately and at separate times; yet, they all contain funding and cost information and procurement quantities, frequently in different formats and units (e.g., with or without spares). The numbers often changed even after the documents had been submitted and there was a great deal of confusion when the documents were not consistent. My recommendation is that the ASR(CAS) should be submitted with the acquisition plan and consistency with the later ICA costs not be required. The cost annexes should be deleted from the DCP and the information in the APB referenced. The DCP has the APB as an attachment which presents the cost, funding, and quantities information in one place with only one format. This would reduce the confusion and last-minute rewrites.

Process

Planning Meetings. Five Services action officers planning meetings were held January-June 1989 (Chart 1). Often, information volunteered about the DAB process was well-intentioned but wrong. Most attendees had not experienced a DAB and did not know the information was erroneous. One Office of Primary Responsibility (OPR) said his office was the appropriate OPR to brief the user requirement because JTIDS has numerous users, not just the Tactical Air Command. It seemed sensible at the time but, at the last minute, the AFSARC Secretariat said "no," and TAC had to give the briefing, having short notice to prepare. An additional problem was that many action officers did not take action items from these meetings as formal direction. They required a message or waited for written direction before responding.

CHART 1. DAB PLANNING MEETINGS

DATE	ATTENDEES
19 Jan 89	Services
03 Feb 89	Services
13 Feb 89	OSD
03 Mar 89	Services
10 Mar 89	OSD
28 Apr 89	Services
01 May 89	OSD
01 Jun 89	Services
02 Jun 89	OSD

CHART 2. PROGRAM/DWSIG BRIEFINGS

DATE	ORGANIZATION
07 Jun 89	ESD/CC/TC
12 Jun 89	WRALC/CC
13 Jun 89	SAF/RLS
19 Jun 89	AFALC/CC
20 Jun 89	AFLC/SV
22 Jun 89	AF/LE, SAF/RL
13 Jun 89	TAC/CC
02 Aug 89	DWSIG

CHART 3. INDEPENDENT COST ANALYSIS

DATE	EVENT/ORGANIZATION
28 Feb 89	Planning
26 Apr 89	[illegible]
19 Jun 89	[illegible]
24 Jun 89	[illegible]
26 Jun 89	[illegible]
27 Jun 89	[illegible]
28 Jun 89	[illegible]
19 Jul 89	[illegible]
26 Jul 89	[illegible]
02 Aug 89	[illegible]

Four OSD action officers planning meetings were held February-June 1989 (Chart 1). There was not consistent attendance from appropriate OSD action officers. If the JTIDS OPR could not attend, he would send someone to take notes, keeping issues from getting surfaced or resolved in a timely manner.

The OSD action officers did not come prepared to help the program through the DAB "gauntlet." They view themselves as the DAB gauntlet and came to collect information for their positions. Giving them information early did not seem to help later because they wanted last-minute, up-to-date information to write papers for their bosses right before the DAB committee and DAB meetings. The action officers are working many programs at once and the most important program is the one closest to a DAB, so that is the one they work. Your program is low priority until the month before your DAB. The OSD action officers were not helpful in resolving issues up front and, in fact, most would not review drafts of documents.

My recommendation is that the cognizant OSD committee action officer should act as the central control point for all of OSD, answering the easy questions, filtering the other questions and working the interface between the Service headquarters and OSD. Many questions were the same and some were of such great detail that the answer was four pages long. Someone needs to determine which questions are appropriate and necessary to support a DAB decision consistent with OSD's role of oversight. To handle this deluge of requests for JTIDS, the Joint Program Office (JPO) sent someone to work full-time in the Pentagon for a week before the AFSARC and again before the DAB committee meeting to act as a single focal point to gather the questions and task the appropriate JPO office to prepare a point paper, as well as to update briefing charts with all last-minute changes, mostly in funding and cost.

Briefing Requirements

The JTIDS briefing requirements were much less than usual for a joint program. Only three additional briefings were required by the other Services, and most briefings were conducted jointly. However, 35 formal briefings that directly supported the DAB were still required. There was also an increase in the number of other briefings and meetings as interest in program status by outside organizations increased due to the approaching DAB. The large number of briefings required is due in part to the number of different briefings required for various functional areas: test, cost, logistics (Defense Weapons Systems Improvement Group (DWSIG)), as well as the overall program briefing. Each functional briefing had its own briefing trail; most of these trails were started three months before the DAB (Charts 2-6). Some of these briefings could be eliminated by having an organization's action officer staff all of the briefings below the commander's level.

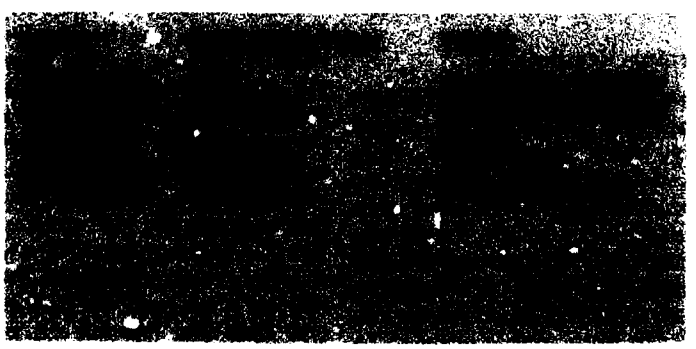
The program manager will brief anyone whom he thinks could hinder the decision. The program manager believes, rightly so, that he can best reduce the risk of a poor DAB decision by personally explaining to each "naysayer" why his approach is the best choice. This generated a lot of informal briefings given at the eleventh hour. In fact, the JTIDS PD and PEM both spent the morning and afternoon on the day of the AFSARC, the DAB Committee and the DAB giving informal (uncounted) briefings to key players.

The requirement for a threat briefing to Defense Intelligence Agency (DIA) is redundant. The briefing is given after DIA validates the System Threat Assessment Report (STAR). The AF/IN recommended that the program element monitor (PEM) give this briefing. It is non-productive to brief the experts on a product they have already approved. My recommendation is that this briefing requirement be eliminated.

CHART 4. TEST RESULTS BRIEFINGS

CHART 5. PROGRAM BRIEFINGS

CHART 6. SPECIAL TOPICS



Independent Reviews. They come out of the woodwork. Because JTIDS' number-one issue is reliability, ESD had early independent reviews of the reliability performed by ESD/PL and MITRE as preparation for the DAB. In order to prepare their positions for the Air Force Weapons Systems Improvement Group (AFWSIG), both Warner Robins Air Logistics Center (WRALC) and Air Force Acquisition Logistics Center (AFALC) also did independent reviews. The Navy did an independent review in April; then, in June, SAF/AQ requested AF/LE-RD do an independent review of the reliability.

A Production Readiness Review (PRR) was done in May to assess if the contractors were ready for production. The product engineering service officer (PESO) participated in this review. Then, in July, Air Staff personnel did another independent review to determine if the program was ready for production.

The reviews are unscheduled and occupy a large amount of time from the SPO and contractor personnel just when they are busy with DAB preparations and a transition to the next phase. The bottom line appears to be that no one trusts someone else's independent assessment.

My recommendation is that at the first DAB planning meeting all independent reviews required should be identified and tasked to an organization at the lowest level that will be acceptable to all decision-makers. These reviews should not be reaccomplished at each level of the management chain.

Governing Regulations

There are no current AF regulations that implement DODI 5000.2. Consequently, there is no right way/approved guideline to use in preparing the documents and determining who coordinates, signs, or approves them. Everyone has a different opinion; the draft regulations were in constant revision so there was no consistent reference. The only answer seems to be whatever OSD wants is what is required. Additionally, it was difficult to distinguish which documents are required for a DAB (such as the DCP, COD, ASR(CAS), etc.) versus which documents are to be prepared or updated at a milestone as appropriate timing but not as a suspense (such as the Security Management Plan, Systems Engineering Management Plan, etc.)

JTIDS Issues

Reliability Growth Plan and Criteria. This has been a known issue for several years. The problem was that the working level could agree on a plan early, but approval required agreement at a higher level and the higher-ups did not get involved until right before the DAB. When they don't agree with the current plan, all previous work goes down the drain and last-minute negotiations drive the process.

Warranty. During the DAB preparations, there were issues on the structure of the warranty. The JTIDS warranty includes contractor logistics support as a separate contract line item number (CLIN). During the Acquisition Strategy Panel briefing, it was noted that O&M funds would probably be required for these repairs. The warranty was reviewed by HQ AFSC and found to be sufficient, legal and consistent with ESD's own warranty guidelines. Although there may have been other ways to write this warranty, the controversy appeared to be the result of personalities that disagreed earlier and then used the DAB review process as a way to get a new hearing on their point of view.

Navy Funding Versus ICA Costs. One of the difficulties of a joint program is working funding issues when the other Services control their own funding. In this particular case, the Navy disagreed with the joint ICA team's cost estimate and maintained that the JTIDS units would be cheaper and that the AF was overbudgeted. The ICA team's point of view was that the Navy was underfunded. This issue did not arise until the ICA estimate was final and has not yet been resolved; however, it was not addressed at the DAB.

Lack of F-15 Requirement. This was an unstaffed issue brought up at the DAB. All players knew that TAC had no intention of buying more JTIDS for F-15s beyond the OSD-directed equipage of 20 aircraft. The surprise was that OSD brought this up at the DAB as unacceptable and wanted TAC to either buy more or transfer the F-15 terminals to the Navy. This had not been viewed as an issue when preparing for the DAB because the Air Force was following current OSD direction.

Frequency Clearance. Frequency clearance for operational use was legally required before the DAB. This was a known problem and was diligently worked by the JPO, Air Staff and OSD. The approval was due by June 30 and OSD didn't call the National Telecommunications and Information Administration (above the working level) until the end of July despite promises to elevate the issue by July 5. There also seemed to be some grandstanding involved: The conditional approval was delayed until the last minute.

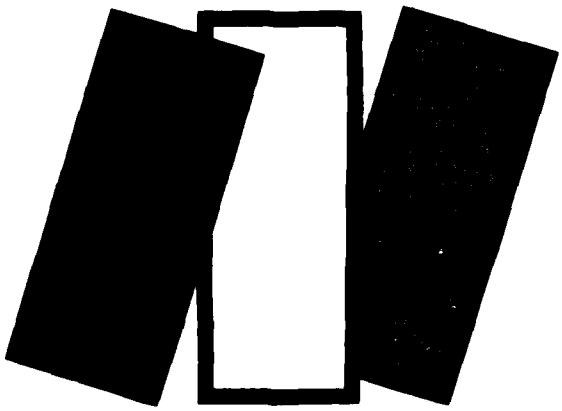
Could Issues Have Been Resolved Earlier?

The warranty and reliability growth plan should have been ironed out earlier but they illustrate two common problems to resolving issues early. First, there is not good communication between the decision-makers and their staff officers—the people making real decisions work the issues right before the DAB and, frequently, the staff does not know what their organizations' DAB issues will be; two, the DAB gives an opportunity for points of view that have been ignored or overruled to resurface and be argued again. The Navy funding problem will not be resolved until proposals are received but it could have been shelved earlier if the ICA had been completed earlier in the process. The F-15 requirement issue was a surprise although draft program budget decisions (PBD) from last year did indicate that OSD thought 20 F-15s were enough. The frequency clearance issue illustrates the difficulty of working with agencies outside of DOD: They have no motivation to resolve the issues early and it is difficult to get the issue elevated until it is critical.

(See CLEMENS, page 25)

1991 ACQUISITION RESEARCH SYMPOSIUM

A C Q U I S I T I O N F O R T H E F U T U R E



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ROLE OF TECHNOLOGY IN COMMUNICATION

Professor David D. Acker
Dr. J. Robert Ainsley

The way people are communicating, seeking information and obtaining intelligence is changing radically. Today, telephone lines are carrying more than voice conversations. They are carrying high-quality television pictures and things like electrical impulses necessary to make possible remote electrocardiogram heart diagnosis. Robert Lucky, American Telephone and Telegraph, said he believed high fidelity text, music, animation, sensory data, light, color, remote control commands, information from computerized bases, communications between personal computers, video games, music videos, the news, facsimile (FAX) copies of documents, numbers and instructions would be circulating through the (telephone) network as disembodied bits of information. He added, "I'd like to think of the telephone network as something that puts you in touch with a larger intelligence. Whether human intelligence—singly or in groups—or computer intelligence, I'm talking about accessing intelligence."

It is obvious that as society grows more complex, so do communications. This can be attributed partially to exponential growth of new knowledge in almost every area of professional knowledge. Vannevar Bush, Franklin D. Roosevelt's science advisor, was probably the first person to recognize the impact of this phenomenon on effective communication in an article appearing in the 1945 *Atlantic*. He suggested development of the Memex machine to enhance the communication process by providing quick access to large data bases of information. Since then, technological innovations have enhanced communications. Some of the devices/techniques being used with marketable success are the computer, telephone, radio, television, FAX machine, teleconferencing and videoconferencing. We are becoming electronically interdependent. Relationships being formed across international boundaries were not possible a few years ago.

It is important to note that these tools and techniques will not, simply by their use, result in effective communication. Essential ingredients for effective communication must be present when using the technology. Although we use the telephone to talk to someone, we need good communications skills. The telephone serves only to enhance the process; technology, which is an enhancing mechanism, is good only when we apply it effectively.

Computer

The computer is a widely used instrument today. Electronic mail (E-mail) software allows users to send notes to other users in a fast and organized manner. E-mail messages are coordinated/sent to specific individuals without fear of losing information in the distribution system. Messages can be tagged to indicate to the sender that the receiver read the note. No more... "It must have been misplaced." Word processing, spreadsheets and data base management packages make information transmittal easier to perform. New programs increase efficiency in how we organize, analyze and present information. Using communication software allows the sending of large documents via telephone lines fast and efficiently. Transmittal of information is significantly faster than mail delivered by the United States Postal Service. Online catalogs and bulletin boards allow us to order goods and services and learn new ways to use the computer for communication.

Telephone

The telephone, a central part of modern communications, is a useful tool at home and work. We cannot perform effectively without using this instrument. The popularity of the cellular telephone, which allows us to conduct conversations with others while driving to and from work or while working in the backyard, is increasing.

Technological capability of the telephone is expanding. Telephones are available with a memory to store telephone numbers and invoke them automatically; to talk or to hear without using a handpiece; to answer a call without being present; to determine the number of an incoming call; and to take several calls at once. Some telephones have features normally reserved for businesses like intercom and conference calling. Allen M. Steward, vice-president of GTE Corporation, believes that just as the Touch-Tone surpasses the rotary-dial telephone, new technology will make Touch-Tone beeps obsolete. Research and development communication initiatives concerning the handicapped provide technology making communications easier. These features improve our ability to communicate more effectively.

According to a Stanford University computer scientist, by the turn of the century, there will be telephones smarter than the people using them.

Technology has been changing *how* we communicate. Consider that more than two billion times every day, people pick up a telephone at work or at home and make calls. If we were to sample calls randomly, we would hear about people's lives in many languages. In the future, there will be few human operators to hear those voices on the line; conversation will be transformed by computers into bits of numbers pulsing through wires and bouncing off satellites.

The dividing line between telephones and computers is disappearing and the two instruments will soon become one. When the telephone of the future is also a computer, it will be as programmable as any state-of-the-art personal computer. If our telephone is not used as our personal computer, then our personal computer will probably serve as our telephone. According to a Stanford University computer scientist, "By the turn of the century, there will be telephones smarter than the people using them."

Radio

The radio remains a significant communication tool. It is a popular device among music lovers of all ages. It also informs us of current events and weather conditions. Radio talk-shows provide an opportunity to express our opinions on local, state, national and international issues. The radio is a medium through which public opinion is shaped. The radio informs us about the availability of goods and services through creative advertisements and, importantly, it educates us.

Television

Television is probably the most powerful influence in our daily lives. In addition to the features offered by radio, television provides us real-life pictures of current events. Seeing current events in the world has brought people of many nations closer together; watch history unfold instead of reading about it. While there is still a long way to go, television is breaking down cultural barriers. Television coverage of the Vietnam conflict brought it into the homes of millions of Americans each night, and had a profound affect on public opinion. Television also brings sporting events, talk shows, educational programs, cultural events, movies, and diverse programs into our homes. We can view current movies and special programs with video cassette recorders (VCR); further, the video camera allows us to shoot home movies and local events and play them back immediately. Cable television (via satellites) brings us a variety of programming. No other communication medium has made the world a smaller place or had a more profound impact on our lives.

Facsimile Machine

The FAX machine, using telephone lines, permits transmission of documented information over long distances in a short time. This improves the ability to make decisions quickly. This technology is used to market goods and services.

Teleconferencing and Videoconferencing

Conferences and meetings are conducted by integrating use of telephone, television and satellite technologies. Benefits can be measured by time and dollars saved. Conferences and meetings are held without attendees leaving office environments. This translates into travel savings and, subsequently, into productivity savings; i.e., travel time saved can be applied/used to perform other tasks.

Value of Technological Advances

Advances in technology are altering ways people relate and communicate. We may be less inhibited when communicating through technology, and tend to be less self-aware. Although we may develop a "me-and-my-machine" feeling, we cannot forget people receiving our outputs.

In face-to-face situations, we see the speaker's smile or the place he takes at a meeting, giving a cue to his status. In computer exchanges we have no such feedback. We may be "blind" to recipients' backgrounds and knowledge; therefore, it is imperative that the message being transmitted be as clear as possible.

When using a computer to send E-mail, we do not see the receiver and do not get non-verbal cues. There are social norms around E-mail, which is not the same as meeting someone in person, or talking on the telephone and identifying ourselves. Consequently, the result of these computer exchanges are less predictable, but they can be effective. If we recognize potential problems at the outset, we can make plans to deal with them.

Shy people usually benefit from modern-day technologies, which help communicate without embarrassment. No one is looking when you transmit a message, and you do not have the self-conscious feeling you may experience when someone is present.

Technology sometimes promotes deeper relationships between people, who may "meet" each other via using a current technology and later, meeting face-to-face. In such cases, technology stimulates human contact rather than reducing it.

Communication through technology is a democratizing effect. In a face-to-face meeting, one person may monopolize the discussion, another may tend to compete, and others may take minor roles. On a computer, participation tends to level out. Participants talk about the same amount, and tend to be less conscious of status, having a feeling of being protected by anonymity.

Using technology forces us to organize our messages. We do not place a telephone call without a reason and, therefore, give serious thought to what we are going to ask and respond

(See ACKER/AINSLEY, page 47)

IS YOUR SOW A STATEMENT OF WORK

In 1989, the Air Force Systems Command awarded or administered 1,566 definitive contracts valued at $7.88 billion with 957 different contractors. Central to these contracts is a crucial document known as the Statement of Work (SOW). We have found, by surveying numerous Air Force program managers, that there is widespread confusion, misunderstanding, and misconceptions regarding SOW preparation. In fact, many program managers believe they can prepare a SOW in what ever manner they see fit. In short, our survey indicates that SOWs are not of the quality they should be. This article will describe the purpose of a SOW, the history of SOW preparation guidance, the mechanics and basic content of our SOW survey, the interrelationship of the SOW to the solicitation, and the SOW review process. Reference will be made, throughout, to significant results from the surveyed population as a whole, as well as to individual respondent comments.

Purpose of the SOW

The Federal Acquisition Regulation mandates the requirements for work statements as follows:

> When private commercial sources are available and a cost comparison is required, the Government's functional managers responsible for the comparison or another group shall prepare a comprehensive, performance-oriented work statement. The work statement must accurately reflect the actual Government requirement, stating adequately "what" is to be done without describing "how" it is to be done; include performance standards that can be used to ensure a comparable level of performance for both Government and contractor and a common basis for evaluation; and be reviewed by the contracting officer to ensure that it is adequate and appropriate to serve as a basis for solicitation and award.

According to MIL-HDBK-245B, Preparation of Statement of Work:

> The SOW is the document by which all nonspecification requirements for contractor efforts must be established and defined either directly or with the use of specifically cited documents....The SOW establishes nonspecification tasks and identifies the work effort to be performed expressed as minimal needs....The SOW defines those work tasks that cannot be contained in a specification and must never be included in the CDRL (contract data requirements list) or DID (data item description).

The SOW, a legally binding document, must capture all necessary management functions that will support the government decision process and ultimately leads to delivery of a product or service satisfying mission requirements. Likewise, the SOW can identify resources the government will provide to industry in order for the contractor(s) to meet government requirements successfully.

History of SOW Guidance and Policy

To understand how a SOW is developed in today's environment, you should have some familiarity with the history of SOW preparation guidance. In 1972, AFSCP 800-6, *SOW Preparation Guide* was released and then later rescinded in 1976 because it did not require a SOW format in accordance with the work breakdown structure (WBS) guidelines of MIL-STD-881A. The AFSCP 800-6 required a six-part SOW which contained no applicable documents section. In 1975, the *Laboratory Program Manager's Guide*, Parts I and II, SOW Preparation was published. Although a nice attempt to document lessons learned in a laboratory setting, it was rescinded in 1976 for the same reasons as AFSCP 800-6.

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OR SOURCE OF WOE?

Captain Terry R. Adler, USAF
Richard A. Andrews, CPL

In August 1978, the Navy developed MIL-HDBK-245A, *Preparation of Statement of Work*, which advocated a three-part SOW and supported a SOW format and content consistent with the MIL-STD-881 WBS. Also in 1978, the Office of the Secretary of Defense issued a letter to all Services directing the use of MIL-HDBK-245A for SOW preparation. In 1983, the Air Force attempted to provide more clarification of the process by drafting AFSCR 800-XX, *The Statement of Work*. Though never officially released, this document required a three-part SOW format, which included a compliance document section rather than an applicable documents section, was incompatible with WBS format, and contradicted the government's contract performance measurement requirements. If you're still using one of these outdated documents to support SOW development, our advice is simple—tear them up and throw them away.

Compounding the problem was the Electronic Systems Division's concurrent development of an AFSCR 800-XX based computerized SOW authoring system known as *Computer Generated Acquisition Document System* (CGADS). Basically, CGADS asks a series of self-paced program specific questions which results in the creation of a draft SOW outline. The outline highlights data items, military standards and specifications, action messages, and other warnings based on your responses. Because CGADS was based on AFSCR 800-X-X, it has been in the wrong format since its inception and is contradictory to some current SOW preparation requirements. For whatever reason, CGADS has not been recognized as a significant aid in SOW development. Over 74 percent of 1,025 responses neither agreed nor disagreed on its benefits. The CGADS is under revision and soon will be in WBS format which should make it a more useful management tool.

Current Air Force SOW preparation policy is contained in AFSCR800-6, *Statement of Work*, dated April 1986. The AFSCR 800-6 invokes MIL-HDBK-245B, for SOW format and content, and AFR 310-1, *Management of Contractor Data*, for data acquisition and management. The AFSCR 800-6 requires using CGADS, or a CGADS-like system, for initial SOW development. By AFSCR 800-6 mandating use of MIL-HDBK-245B, SOWs are now prepared using a three-part format to include an applicable documents section, and are compatible with the WBS.

When program offices continually refer to these outdated documents for SOW guidance, it creates problems. For instance, by saturating industry with different SOW formats, we end up paying contractors to decipher what we really mean. When SOWs are not prepared in accordance with MIL-STD-881A, they are inconsistent with follow-on contract performance measurements such as Cost/Schedule Control Systems Criteria (C/SCSC). The government should be providing all contractual documents in the same format and let weapon system unique program management and technical requirements be the difference. This one face, or format, to industry makes organizational sense, especially for those who have to interpret government requests for proposals.

SOW Survey Results

In 1988-89, 2,264 Air Force Systems Command program managers, in Air Force Specialty Codes of 26XX through 28XX, were sent a 65-question survey on SOW preparation. The survey was structured to obtain demographic data on each respondent, to weight their relative SOW experience levels, to explore their primary SOW development techniques, and to categorize common SOW preparation problems and recommended solutions. The range of respondent demographic data covered almost all paygrades, locations within the Air Force, and levels of experience. The average survey respondent was a captain with a technical background who worked in or for a SPO. Significant to our survey was the fact that nearly 70 percent of those responding had been responsible for preparing more than 3 SOWs in their careers. Of the 2,264 surveyed, 1,038 responses were received for a 45.8 percent return rate. We consider this phenomenal response to be an indicator of the consensus of concern about SOW development. These 1,038 responses included more than 650 handwritten comments covering the full gamut of concerns on the SOW process.

Identification of Symptoms

As mentioned, our survey consisted of 65 questions on respondent demographics, level of SOW preparation experience, and recommendations to improve the process. In this segment, we want to set groundwork by identifying selected survey questions relevant to problems associated with SOW development. We'll explore specific responses and possible trends and provide our subjective interpretation.

To understand the significance of this problem, we should point out that when asked how many of respondents had ever been involved in SOW preparation, 729 (71 percent) of the 1,025 respondents indicated a varying degree of experience. Of those, 19 percent gained experience exclusively in major programs, 52 percent in non-major programs and the remaining 29 percent in both type programs.

FIGURE 1. THE SOW IS ONE OF THE MOST IMPORTANT DOCUMENTS PREPARED BY THE SPO

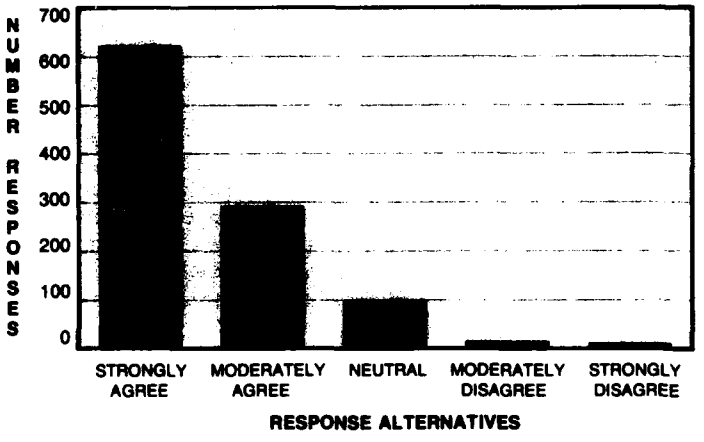
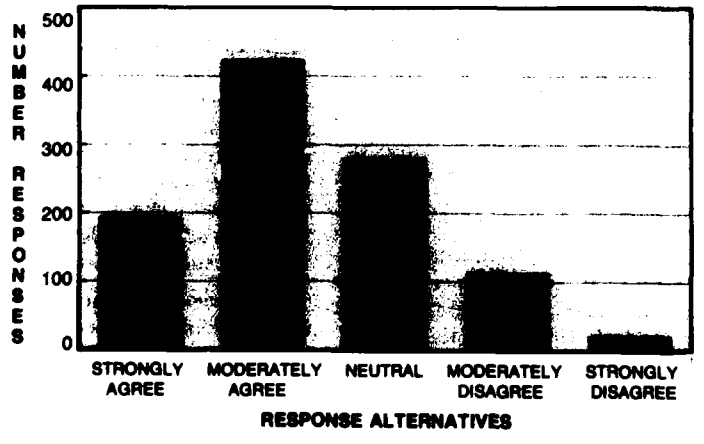


FIGURE 2. SOW DEVELOPMENT IS ONE OF THE MOST DIFFICULT TASKS THE SPO PERFORMS



Recognizing Symptoms

Part IV of the survey asked respondents to rate their degree of concern (none, minor, major, and overwhelming) on a series of 10 SOW preparation problems. These included (1) grammar and syntax, (2) defining data requirements, (3) developing tasking statements, (4) dealing with time constraints, (5) related program experience, (6) word processing capability, (7) finding ambiguities and loopholes, (8) group communication skills, (9) interpreting government guidelines and, (10) integrating program requirements. Of these areas, defining data requirements, development of task statements, and integrating program requirements received the highest ratings for "major concern," followed closely by dealing with time constraints, finding ambiguities and loopholes, and interpreting government guidelines.

In addition, respondents were asked to provide written comments on any issue they felt was significant to SOW development. As a consequence of survey responses, our interpretation of those responses, and to some extent our own experience in SOW preparation, we have summarized results into four basic findings.

Finding #1. There appears to be two fundamental but diverse aspects associated with the actual writing of a SOW. One, and in reality probably the most crucial, is the identification and thorough description of technical and managerial taskings the contractor is expected to perform. The other area is proper SOW formatting, which includes content. In this application, content refers to what should and should not be in the SOW. As examples, performance requirements belong in the specification; delivery schedules belong in Section B of the contract; and data are requested in the contract data requirements list (CDRL). One respondent's comment summarized this point most effectively.

I have prepared SOWs for two product divisions. I was surprised and frustrated to find each division prepares SOWs differently, essentially invalidating my previous experience. Program documentation and acquisition procedures must be standardized throughout AFSC if the acquisition process is to be made optimally efficient.

Finding #2. There are perceptions made by SOW developers influencing the way they prepare a SOW. The manner in which an individual would attack the performance of a complex task is influenced by their perception of importance of the task; difficulty of the task; their experience in performing similar tasks; and thoroughness and usability of available guidelines. Several survey questions revealed respondents' perceptions on matters relevant to SOW development. Figure 1 clearly shows they consider the SOW as one of the most important documents prepared by the program office, while Figure 2 supports the contention that the SOW development process is one of the most difficult tasks performed. Though a large percentage of those surveyed indicated some degree of SOW preparation experience, there is a strong feeling, as can be seen in Figure 3, that contractors will always be able to find loopholes in SOW requirements. This may be one of the reasons that respondents weren't quite as convinced, as depicted in Figure 4, that the current SOW preparation guidance is as specific and adequate as they think it should be. When specifically asked about the existing guidance documents, AFSCR 800-6, statement of work and MIL-HDBK-245B, preparation of statement of work, the largest percentages by far (65 percent and 61 percent, respectively) neither agreed nor disagreed (neutral) that these documents were valuable aids in developing a SOW.

FIGURE 3. CONTRACTORS WILL BE ABLE TO FIND LOOPHOLES IN THE SOW CONTENT

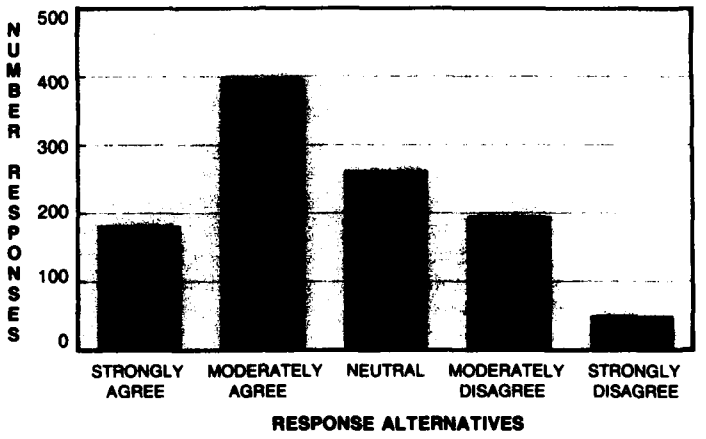
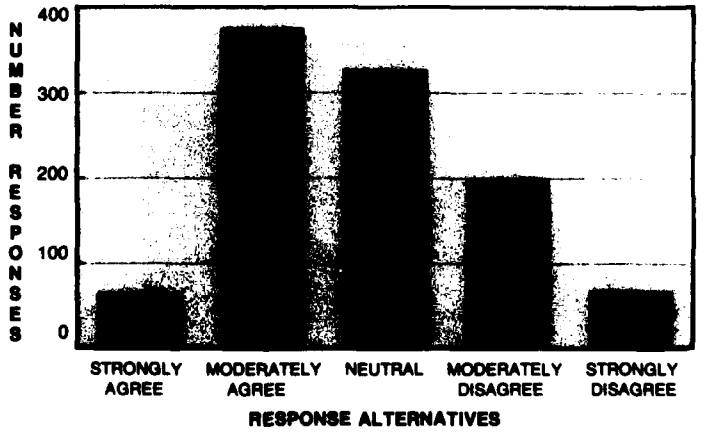


FIGURE 4. THE AIR FORCE HAS SPECIFIC AND ACCURATE SOW DEVELOPMENT GUIDELINES AVAILABLE



An interesting result surfaced when survey takers were asked to provide opinions on the statement, "Most program SOWs are written in clear, concise and unambiguous language." Of the 1,033 responses, 25 percent neither agreed nor disagreed, 48 percent moderately disagreed and 13 percent strongly disagreed (see Figure 5). This response is significant when you realize only 14 percent of respondents had any positive convictions that our SOWs are clear, concise and unambiguous; yet 71 percent were experienced in SOW development. Could this mean that a large group of experienced SOW preparers do not put much faith in their ability to write a SOW?

When asked to respond to "The SOW should be prepared solely by government personnel" and "Technical support contractors and prime contractors are good sources of information but should not provide draft SOWs for government uses" the "moderately disagree" choice received the largest response percentage (see Figure 6). This may mean that because SOW preparation guidance tends to be perceived as inadequate, there may be a growing trend toward more contractor development of SOWs. We are not implying this tactic is improper. However, it does appear that an attitude of "It is simpler to review and comment on a document than it is to write it" is becoming more commonplace.

When contractors prepare SOWs, we must be sensitive to the fact their inputs may reflect their way of wanting to do business which may not necessarily be in the best interest of the government. We may be going through a metamorphosis from "doers" to "reviewers." This is not our isolated opinion. Several similar comments were received in the survey responses.

> The biggest obstacle I see in defining statements of work is the technical inexperience of the government personnel. We are forced to rely on contractors to provide draft SOWs because no one in the Air Force is technically sharp enough to fully understand the problem and the solution. It's an old story, and I don't see a solution as long as we are contracting every small task that comes along instead of doing work in-house and developing the experienced personnel.

> Our technical support contractor develops virtually all SOWs for major programs. Government personnel have little opportunity to change or alter SOWs and project officers generally have very little influence within the organization. Consequently, SOWs (as well as specs) are very often poorly structured, poorly written, and in general serve only as square fillers in the contractual process.

Finding #3. Requirements identification, development guidelines and education/training are "direct contributing factors" affecting SOW development. By our definition, a direct contributing factor is one that formally exists in policy, procedure or practice; is recognized as a needed component of the development process; and because of misapplication or non-application has a detrimental affect on SOW development.

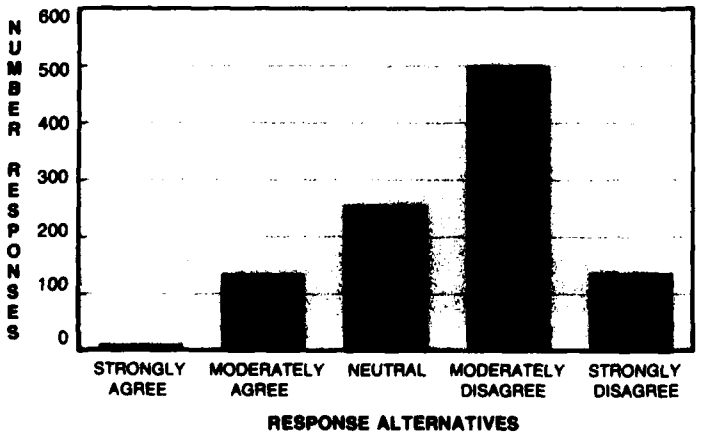
Requirements Identification

For SOW development, three different but integrated sets of requirements must be considered. These are (1) user operational requirements, (2) regulatory requirements, and (3) functional area requirements.

User Operational Requirements

Nearly all acquisition programs begin with the operational command identifying their inability to perform any or all parts of a given mission. The deficiency customarily takes the form of a statement of operational need (SON) as described in AFR 57-1, *Operational Needs, Requirements and Concepts*. The SON, in part, provides the implementing command preliminary requirements to support research, development, test and evaluation planning and procurement activities. Once an acquisition program starts, the operating command typically prepares a system operational requirements document (SORO) and requirements correlation matrix (RCM), also covered in AFR 57-1. The SORD is the planning document that amplifies and refines the SON requirements in a more comprehensive and quantitative manner. The RCM, a SORD attachment, documents and tracks the formulation of and changes to user requirements as the program moves through the acquisition process.

FIGURE 5. SOWs ARE WRITTEN IN CLEAR, CONCISE AND UNAMBIGUOUS LANGUAGE



The depot support requirements document, prepared by AFLC, is a standalone document whose purpose is to describe AFLC plans and requirements for providing depot maintenance and material support to the system.

What's a SON, SORD, RCM and DSRD got to do with SOW preparation? Well, it's simple. All these user requirements, identified in the early phases of the acquisition cycle, become the basis for much of the effort that will be contained in the SOW. Without a comprehensive and realistic set of initial requirements, it becomes difficult to prepare and negotiate a contract capable of satisfying user needs.

Regulatory Requirements

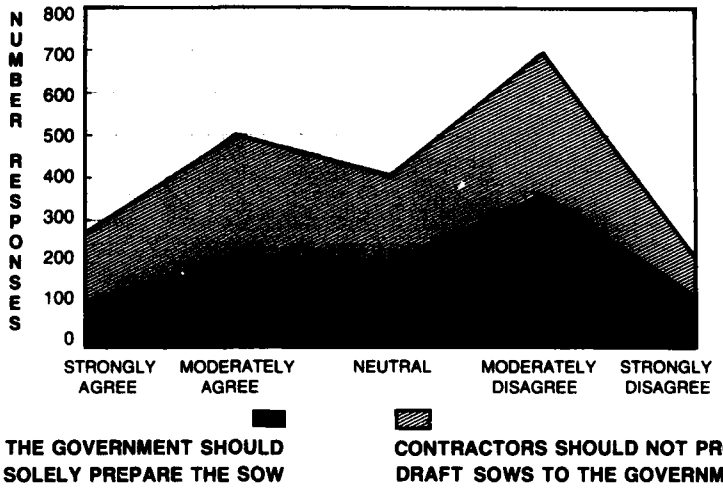
Within the federal acquisition regulation (FAR), Department of Defense regulations, and Air Force regulations, there are certain requirements whose application in the SOW is not left to the discretion of the program office. As examples: requirements for cost reporting; FAR mandated procedures for acquiring proprietary data; and Air Force specific, but tailorable, SOW language for technical order development and acquisition (TMCR 86-01). Because these requirements are scattered throughout a deluge of government documents, chances increase that something may slip through the crack.

Functional Area Requirements

The common approach in SOW preparation is to identify and assign functional experts to draft the applicable SOW requirements in their area of expertise. Each expert identifies the unique taskings of the discipline and tailors these requirements to the specific phase of the acquisition process. One respondent, after having tried to accomplish this task, stated frustration quite frankly.

> I have wasted untold hours in an inadequate technical reference library trying to locate the mil-specs/mil-stds. There appears to be no logic to the numbering system. I can't thread my way through the index (which is several microfiche long). Even if I look through the index, titles rarely reflect true content. I even tried ordering some pubs on the recommendation of others. My order for Mil-E-5400 was returned by the pubs center as "item not identifiable."

FIGURE 6. GOVERNMENT VS CONTRACTOR SOW PREPARATION



The whole process of SOW development begins with realistic requirements. Access to complete and realistic requirements are not the end-all to our SOW problems, but it is a beginning.

SOW Development Guidelines

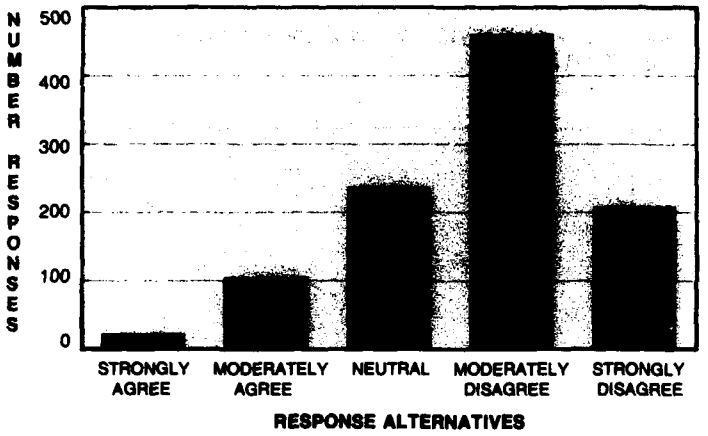
Availability of SOW development guidelines received more than a fair share of attention in the survey responses. This particular subject, though addressed previously, warrants additional attention because of several comments. One response particularly caught our attention.

> Shoehorning every SOW into the MIL-STD-881A WBS categories is counterproductive—it promotes SOW preparation as a rote "cut-and-paste" exercise with too little creativity. As a result, unnecessarily rigid task procedures tend to be called out and too much data is asked for. Logically conceived tasks often address multiple WBS categories. By preparing SOWs "right" we often create undesirable task partitioning. For example, we really want the contractor's systems engineer to consider supportability and producibility as an integral part of systems design, but by calling out those areas as large separate tasks, we virtually assure that separate contractor teams will be established.

In all good conscience, we must agree in part to this comment. The MIL-STD-881A has been around a long time. We have been hearing for a few years that a revision to the WBS structure is eminent. Unfortunately, except for some preliminary drafts, not much else has surfaced.

Standardization plays a key part in the contracting process. The SOWs must have certain rules for what they can and cannot contain and what their format should be. The MIL-HDBK-245B, though needing some updating, is an excellent document for the format requirements for a SOW. An improved WBS is needed to support government management and tracking of contractor performance.

FIGURE 7. MOST GOVERNMENT ACQUISITION MANAGERS HAVE THE NECESSARY EXPERIENCE AND TRAINING TO PREPARE THE SOW



Education and Training

Education and training to support SOW development will be treated as a separate and detailed segment of a subsequent article. However, we have chosen to highlight inputs regarding education/training because many respondents felt it was a major part of the problem. When asked if acquisition managers have the necessary experience and training to prepare SOWs, of the 1,031 responses, 65 percent "moderately" to "strongly" disagreed with the statement (see Figure 7). Though many comments were provided, one seemed to capture at least a portion of their frustration.

> We have a large "corporate memory" that seems to get little education on how SOWs should be written. This is a crime. This corporate memory needs to be forced into these courses. At the very least, everyone involved in SOW preparation should have a refresher course in how SOWs should be written. There needs to be more direct communications with the users to determine that the proper requirements are identified. We must realize that those accountable for SOW preparation consider education and training of paramount importance. Whether the inadequacies of training are perceived or real, the issue must be accepted as a direct contributing factor to the self-proclaimed shortcomings of SOW preparation.

Finding #4. Indirect contributing factors affecting SOW development tend to relate to managerial responsibilities. An indirect contributing factor is one that has no formal policy governing its accomplishment; it was not greatly recognized as a needed component of the development process, but because of misapplication or non-application it has been identified as having a detrimental effect on SOW development. These are the pet peeves of respondents—situations that have been a source of irritation. Though many examples were given, only the most prevalent responses are mentioned. We feel respondents' comments speak for themselves and require no explanation.

—The newest lieutenant gets to do the next SOW. (AF rule #212).

—Coordination of draft SOWs is a problem. Most offices think: [This is a draft and not important. Let's wait for the real thing before we coordinate or comment.] This means the coordination of the final SOW will be delayed.

—Lesser experienced bosses not believing that you know what you're doing.

—All too often, people will copy a SOW that worked rather than prepare a new SOW based on program objectives. Some rely on contractors to prepare a draft, but do not analyze what has been left out....A good SOW will not save bad management, but a poor SOW will cause problems in execution.

—After preparing a SOW in accordance with MIL-HDBK-245B and having it bounce at the contract management division, we found out that their contracting officers did not know it existed (MIL-HDBK-245B)....

—Don't let legal get hold of SOW (they dilute your technical description to mush).

The tone of these comments leads us to believe that these kind of actions cause as much frustration to a SOW developer as do the factors mentioned earlier. These comments are really addressing management, leadership, human and organizational behavior, and communications skills. We think these responses are suggesting an increased attention to leadership and managerial skills.

SOW and Other Solicitation Documents

The SOW was never intended to be a stand-alone document. One of the more critical functions a SOW performs is that of integration. The SOW, and its associated work breakdown structure, is the primary instrument around which contractual requirements and contractor costs are based. This segment of the article will briefly address the interrelationship of the SOW to other selected parts of the Request for Proposal (see Figure 8).

SOW and Contract Line Items

For contract management and cost-tracking purposes, supplies and services are identified and charged against contract line items located in Part I, Section B, of the contract. Because each supply or service has its separate form (usually Standard Form 36), they are sequentially numbered and are referred to as CLINs (contract line item numbers). The CLIN types and content are usually recommended by various functional experts involved in SOW development. The CLINs are coordinated by the program manager and approved by the contracting officer. Tasks performed in accordance with SOW requirements must be charged against one of the CLINs in Section B. For this reason, it is necessary that all SOW taskings are accounted for in one of the CLINs. This is generally verified during the source-selection process by requiring proposing contractor(s) to provide a SOW to CLIN cross-reference matrix.

SOW and Specification

The system specification, Part I, Section C, is that document identifying the performance and supportability requirements for the system under development. The SOW, with few exceptions, is not intended to identify systems performance requirements (i.e., speed, accuracy, operating frequencies,etc.) or supportability requirements (i.e., reliability or maintainability quantitative requirements, maintenance concept, etc.). However, the SOW is supposed to task the contractor to perform those activities, be they technical or management, that support the attainment of the requirements described in the specification. It is, therefore, essential that the SOW contain only necessary activities geared to satisfy directly or indirectly the specification.

SOW and Supplies/Services Inspection, Acceptance, Delivery and Performance

The inspection and acceptance criteria for supplies and/or services is located in Part I, Section E, of the solicitation. The inspection and acceptance section identifies by CLIN the location and procedures to be employed for the inspection and eventual acceptance of a supply or service. A supply, for example, can be inspected for compliance with government requirements at the contractor's facility, a government facility, or another location (i.e., subcontractor's plant). The location of acceptance can, and in many cases is, different than the place of inspection and must be so specified. Many tasks in the SOW will result in delivery of a supply (i.e., engineering drawings, technical orders, support equipment, etc.) or performance of a service (i.e., interim contractor support, contractor engineering technical services, etc.). It is therefore necessary to ensure that each SOW task delivering a supply or service has an inspection and acceptance criteria reflected in Section E.

Delivery and performance criteria, Part I, Section F, are similar in application to the inspection and acceptance criteria just described. The difference is that when a supply and/or a service is to be provided, we must also identify where and when the supply must be delivered or the service must be performed. Section F will therefore identify by CLIN, as was done in Section E, the location and date of the supply delivery or service performance. The same fundamental relationship exists between the SOW and Section F as it was for Section E.

FIGURE 8. UNIFORM CONTRACT FORMAT

SOW and Special Contract Requirements

In the development of your SOW requirements, you may feel it necessary to provide the contractor with additional information on what, how, when, where, etc., that affect his responsibility, liability, and performance of certain tasks. Part 1, Section H, special contract requirements, would likely be the place for that explanation. Since there are innumerable options that can be included in this section, a single example must suffice. As a contract requirement, the contractor is to integrate government furnished equipment (GFE) into their system design. You may even identify the exact GFE items in the system specification. You would then most likely place a provision in Section H that describes the contractor's responsibility for the requisitioning, transportation, storage, accountability, and maintenance of the GFE items provided. Because many special provisions of Section H have their basis in SOW requirements, there must be complete agreement between the SOW and these special contract requirements.

SOW and List of Documents, Exhibits and Other Attachments

The List of documents, exhibits and other attachments, Part II, Section J, in some respects, is a catchall section of the contract. Customarily, the contract data requirements list (CDRL) and, though not in accordance with the FAR, the system specification and SOW are commonly found here. Other attachments usually include SOW attachments for things like interim contractor support, provisioning, technical order development; warranty terms and conditions; lists of equipment exhibits, etc. It fundamentally holds true that whatever appears in this section is usually directly related to a SOW requirement.

Just a few more words about the CDRL. Data are a by-product of work. The work effort that generates data is most frequently tasked in the SOW. The DD Form 1423, the data item order form, contains a cross reference to the SOW paragraph that created the work effort. Likewise, the SOW task that generates the data must contain a parenthetical reference to the data item description (DID) number or the CDRL sequence number immediately following the SOW task statement. Data are derived from work, not the other way around. Several problems are eliminated when there is correlation between SOW tasks and CDRL data requirements.

SOW and Instructions, Conditions And Notices to Offeror

This section, also known as the Instructions to Offerer (ITO), is located in Part IV, Section L. It is in this section of the solicitation where we identify exactly what we want in the contractor's proposal response to the RFP. The greatest impact of this section is on the content of the government prepared source-selection plan. The source-selection plan identifies and describes each of the areas, items, factors, subfactors and standards the contractor's bid will be evaluated against. It makes no sense to write an evaluation standard in the source-selection plan if the contractor is not required to provide information related to that standard. It is equally counterproductive for the ITO to require the contractor to provide information where there is no standard to evaluate the information against. What's this got to do with the SOW? Everything. The information you require the contractor to provide per the ITO is almost exclusively based on tasks in the SOW and specification content. You should be able to read your ITO or source-selection evaluation standards and be able to identify the more significant SOW and specification requirements.

SOW Review Process

The SOW is not a stand-alone document or is it the private domain of the program office. Apart from the fact that 92 percent of respondents experienced in SOW preparation believe that all functional managers need to review the SOW for completeness and conciseness, there are still various groups and committees outside the SPO environment whose activities could have a significant impact on SOW content. Of these, the most influential are the acquisition strategy panel, solicitation review board and data requirements review board.

Acquisition Strategy Panels (ASP)

According to AFSCR 800-53, *Acquisition Strategy Panels*, the overall objective of an ASP is to:

> Ensure that a systematic and disciplined approach has been developed to meet the user's needs within resource constraints and that the approach is consistent with the Program Management Directive (PMD). This objective is achieved by conducting a corporate review of the proposed program to verify that the technical approach is effective and the business approach fully supports it.

Except for basic research and exploratory development, ASPs are required on all AFSC programs. The ASPs have replaced business strategy panels and include reviews by all functional disciplines which impact the SPO's acquisition strategy. The primary purpose of the ASP is to serve as a sanity check early in the solicitation preparation process, before development of the RFP is too far along. The panels normally consist of AFSC's top functional experts and representatives from operating commands and HQ USAF. Issues addressed mainly concern the program's background and current direction, technical approach, and business strategy. In fact, AFSCR 800-53 includes an extensive suggested subject list.

One survey respondent replied regarding government technical and business approaches.

> The fundamental problem (in preparing SOWs) is to define what work needs to be done. This question has several components: What work is technically feasible within the budgetary constraints and time constraints? For example, we could probably orbit the Empire State Building in outer space if we spend enough money and time. The problem with Air Force engineering is that quite often the government engineers are so detached from the technical details of the work that questions about the technical scope and constraints are unanswerable.

This comment highlights the interrelationship between a program's business approach, budgetary and schedule constraints, and their overall technical approach. Since the SOW is based on SPO and government technical and business approaches, program managers have the duty of integrating all requirements in the SOW and specification. Our survey results indicated that this is a major concern for most program managers and is one of the most important SOW skills a program manager must possess.

Solicitation Review Boards (SRB)

While the ASP is the front-end, big-picture review of the solicitation review process, the SRB serves as the nuts-and-bolts review preceding release of the RFP to industry. The AFSCR 70-7, solicitation review board, describes the SRB as being required to:

> Review a solicitation to make sure it gives a sound basis for contracting and includes desired program objectives; conforms to existing regulations and laws; implements AFSC acquisition policy; outlines in clear and concise terms what the Government intends to buy; and contains only essential requirements.

The SRB, formerly the solicitation review panel, has been given an expanded role in the solicitation acquisition process as a result of the latest regulatory revision. One of the key functions of the SRB is to review and recommend concurrence and incorporation, or non-concurrence, on all industry comments made to a program's draft RFP. As one respondent put it:

> Remember that it costs the government to have a contractor provide a proposal in response to a SOW. As a government representative, you must insure that the contractor is properly addressing Air Force needs.

Another more subtle yet realistic remark was made by another respondent:

> A major problem is wanting to put something in the SOW that the contractor will not accept; i.e., either change or remove the SOW tasks or, worst case, he will not bid on the work.

This brings us back to our basic question: How does this affect our business approach and acquisition strategy? These are not easy questions to answer, as there really is no absolute right or wrong answer. Our overriding objective must be to determine what will meet the government's minimum needs.

The SOW is typically one of the last documents reviewed at the SRB because it integrates many of the other documents reviewed. The SOW invokes standards and specification(s), it implements the acquisition strategy and other SPO plans, and it identifies where data are generated on the contract. In relation to the ASP, the SRB is typically a lower-level review reflecting the amount of effort needed to evaluate and process the solicitation package. One survey respondent believed that we can do a better job of using Air Force corporate memory:

> A special team, well-trained in SOW writing should review all SOWs prior to release and during their formation to help keep the "corporate memory" from just updating old, poorly written SOWs.

The Aeronautical Systems Division (ASD), Wright-Patterson AFB, has initiated an ongoing SOW review process so that future solicitation packages will be better integrated with the ASD corporate philosophy. Between the times that the ASP and the SRB are conducted, ASD forms acquisition review teams (ARTs) to review the draft RFP and other solicitation documents. The ARTs comprise senior, experienced program managers, typically in the grades 0-6 or GS-15. Their intent is to have as solid a solicitation package as possible before release to industry through upper-management review.

Data Requirements Review Board (DRRB)

The DRRB function and process, described in AFR 310-1, *Management of Contractor Data*, is mandatory for all programs with potential costs greater than $5 million. The DRRB, chaired by the program manager or the SPO's data manager, reviews all data requirements for consistency with other sections of the solicitation. The DRRB is tasked to ensure that the SOW and CDRL are properly cross-referenced and that task requirements are in the SOW and data preparation instructions are in the CDRL. Finally, according to regulatory guidance, namely AFSCR 800-6 implementation of MIL-HDBK-245B, the DRRB must ensure that each SOW reviewed conforms to the policy, guidance and procedures contained in MIL-HDBK-245B.

As mentioned, defining data requirements was selected as the number one problem in SOW preparation. Unfortunately, DRRBs are not standardized among commands, product divisions, or even between program offices. A common DRRB format and process, with expanded SOW review authority, needs to be implemented before any systematic SOW preparation efficiencies can be realized.

Summary

The SOW is the nucleus of our acquisition process but, unfortunately in far too many cases, it is also the genesis of program problems. The SOW survey results just described made it clear that the problems associated with SOW development are multifaceted and equally frustrating to managers and functional experts at all levels. More than 61 percent of the program manager responses think we, the government, do a lousy job of preparing SOWs in clear, concise, and unambiguous language. Poor quality SOWs can't be blamed solely on the educational process, or the government guidelines, or individual perception. It's a mixture of all. Therefore, you must recognize which symptoms are prevalent in your organization and take steps to eliminate them. To improve our SOW quality and effectiveness, we must develop acquisition cadres capable of communicating clearly and efficiently. The next and final article on the SOW process will address the "how to" of SOW development and identification of educational and training resources available to aid in SOW preparation.

(Continued from page 12)

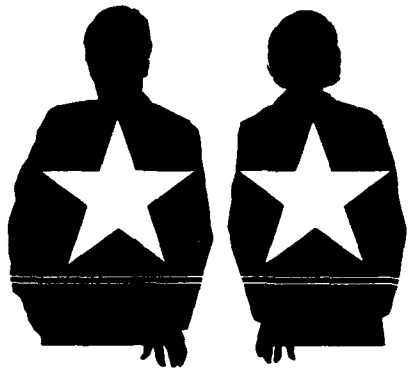
The Acquisition Decision Memorandum (ADM) was released October 11, 1989, four weeks after the DAB. According to individuals that attended the DAB, this ADM reflected the general discussions during the DAB but included specifics not addressed at the DAB. Although the requirement for criteria for future buys was brought up at the DAB, specifics were not addressed and, consequently, the ADM attachment includes direction on issues not discussed at the DAB. The comparative timeliness and adherence to DAB discussions shows an improvement over past ADMs, although an earlier release time would be desirable.

My best advice is to talk to personnel that worked the most recent DAB to find out how it really works and what are the latest OSD "hot issues." The good news is that this program was given the go-ahead for 3 years of Low Rate Initial Production (LRIP) contingent on meeting certain criteria. I think this success was not due to the issues being resolved early (they weren't) but was due, in part, to the credibility we had garnered by working the issues so openly, and in part to OSD's strong desire for this program.

My assessment is that the bureaucracy inhibits early resolution of issues and the DAB process is more akin to a "murder board" than to an oversight and decision process, which is not necessarily bad if the product is a better decision. However, supporting this process is costly, in terms of time, money, and manpower and we need to streamline the process down to the minumum requirements.

Captain Clemens is a Tactical Mission Action Officer at Headquarters Air Force Systems Command, Andrews Air Force Base. She is a graduate of PMC 88-1 DSMC.

PROGRAM MANAGERS WITH



Dr. Owen C. Gadeken *Mr. Bernard J. Cullen* *Ms. Nora F. Huvelle*

Earlier Program Manager articles outlined the methodology[1] and results[2] of DSMC's study identifying competencies (technical expertise, management and leadership skills) possessed by effective program managers in the defense acquisition process. This article provides a more detailed view of program manager competencies. All examples are drawn verbatim from transcripts of 52 program manager interviews used to develop the competency model displayed in Figure 1.

Four points need to be kept in mind as you read this descriptive material. First, for ease of exposition, each competency is discussed separately. In the study, these competencies were seldom manifested in isolation.

Second, specific extracts from transcripts must be interpreted in the light of the overall situations that frequently ran 15-20 pages. The appropriateness and effectiveness of a particular behavior varies with the actual situation. Each example included below is associated with a successful outcome.

Third, the examples used below should be interpreted as spontaneously recalled details of past events. In some instances the examples are not dramatic. What should be kept in mind is that in almost all instances outstanding performers provided more examples of these behaviors than did the effective program managers in the control group.

Fourth, these competencies reflect what effective program managers do in the current acquisition environment. Significant changes in acquisition system structures or policies could well impact the relevance of a particular competency.

Sense of Ownership/Mission

Program managers by virtue of title are the ostensible program leaders. Not all program managers, however, demonstrate the leadership their position requires. Better program managers are far more explicit about their leadership. One program manager, explaining his reaction to being potentially frozen out of a key meeting, exemplifies a compelling "sense of ownership" in wanting to be involved in any decision which positively or negatively affects his program:

> Why did I want to get involved in the treaty? The reason is that it affected my system. I am in charge of the full system management. That is my system. You better talk to me. If you won't talk to me, I will kick down your door. If you throw me out of your office, I will go find somebody else or I will come in your back door. I am responsible for this system. It didn't say excluding the INF treaty. It didn't say only on Wednesday. This is my system.

Effective program managers understand events and make decisions from a broader perspective than their personal success or that of their program. They consider needs and requirements of their Service or of the defense system as a whole.

> Secretary Lehman's policy (regarding industry's investment in tooling costs) didn't look so appealing to us, but from a Navy/DOD perspective it had a lot of merit to it. It is the bigger picture that sometimes programs don't see.

This strong sense of ownership and mission sustains program managers throughout numerous frustrations, obstacles, reversals and last-minute crises.

> I felt frustrated. But at the time I felt like it was such a good thing we were doing for the Army that it was worth all the frustration and the hard work and whatever else we needed to do to make it successful.

Dr. Gadeken is Director of Educational Research at the Defense Systems Management College. Mr. Cullen and Ms. Huvelle are Senior Partner and Consultant, respectively, Cambria Consulting, Inc. Boston, Massachusett (prime contractor for the Program Manager Competency Study).

FIGURE 1. PROGRAM MANAGER COMPETENCY MODEL

(Numbers below do not indicate order of importance)

Managing the External Environment

* 1. Sense of Ownership/Mission
* 2. Political Awareness
* 3. Relationship Development
* 4. Strategic Influence
* 5. Interpersonal Assessment
6. Assertiveness

Managing the Internal Environment

7. Managerial Orientation
8. Results Orientation
9. Critical Inquiry

Managing for Enhanced Performance

10. Long-term Perspective
11. Focus on Excellence
12. Innovativeness/Initiative
13. Optimizing
14. Systematic Thinking

Proactivity

*15. Action Orientation
16. Proactive Information Gathering

*Denotes competencies which distinguish outstanding from effective program managers (at $p < .03$) based on frequency of demonstration

Competency Definitions

1. Sense of Ownership/Mission. Sees self as responsible for the program; articulates problems or issues from broader organizational or mission perspective.

2. Political Awareness. Knows who influential players are, what they want and how best to work with them.

3. Relationship Development. Spends time and energy getting to know program sponsors, users and contractors.

4. Strategic Influence. Builds coalitions and orchestrates situations to overcome obstacles and obtain support.

5. Interpersonal Assessment. Identifies specific interests, motivations, strengths and weaknesses of others.

6. Assertiveness. Takes or maintains positions depite anticipated resistance or opposition from influential others.

7. Managerial Orientation. Gets work done through the efforts of others.

8. Results Orientation. Evaluates performance in terms of accomplishing specific goals or meeting specific standards.

9. Critical Inquiry. Explores critical issues that are not being explicitly addressed by others.

10. Long-term Perspective. Anticipates and plans for future issues and problems.

11. Focus on Excellence. Strives for the highest standards regardless of circumstances.

12. Innovativeness/Initiative. Champions and pushes new ways of meeting program requirements.

13. Optimizing. Makes decisions after carefully evaluating advantages and disadvantages.

14. Systematic Thinking. Organizes and analyzes problems methodically.

15. Action Orientation. Reacts to problems energetically and with a sense of urgency.

16. Proactive Information Gathering. Systematically collects and reviews information.

Political Awareness

The number of players who can potentially impact a program is huge. Thus, it becomes important for a program manager to determine who these players are and which are the key ones.

> When you embark on a change in acquisition strategy, you want to get the rest of those players who are going to get in your way. You have to orchestrate that. I went around and briefed those guys. But the first one, the truth is that I just bypassed everybody and went to see Mr. ------. Once I got him on board it was easy. Nobody was going to argue.

Political awareness involves recognizing perspectives and interests of other key players. The more effective program managers are sensitive to the impressions they make on these stakeholders. For example, this program manager demonstrates the savvy needed to deal effectively with two testing offices that operated independently from the program office:

> I really had to be sensitive to everybody's little piece of pie. There was a reluctance. The operational community traditionally doesn't want to get involved with the development community. So you have to handle it with kid gloves to make sure you're not stepping on anyone's turf. Explain that you're pulling them together to work on a Navy problem.

Relationship Development

Key individuals and offices outside of a program office have the capacity to exert tremendous influence, positive and negative, on a program. Program managers must understand that their overall success is highly dependent on their ability to cultivate and maintain relationships with these external players.

No program manager can afford to manage from behind a desk. The acquisition system is too complex to allow a program manager the luxury of relying on existing policies and procedures.

Nor is there likely to be time during a budget drill or a program review for a manager to begin the process of developing a shared and sympathetic understanding with key players. Relationships need to be already developed. A program manager without his grapevine is likely to be blind sided.

> I got to know the staff pretty well. When I needed a letter from the admiral, I worked it through his staff. I got to be on a first name basis with the staff. They'd ask me questions from time to time; I helped them, they helped me. The point is that in the industry of technology brokerage, the thing that counts is networking.

Most program managers are responsible for systems that have large user communities. Effective user support frequently demands considerably more than building a system meeting technical specifications. This program manager uses a symbolic action to demonstrate commitment to the user community.

> We orchestrated meetings with the fleet. I spent time listening to their complaints and issues. As an example, to show that we cared about what they thought, we had initially used plastic tie wraps on cables. In the Navy, we had used metal bandits for years. Plastic wraps do the same job, but it doesn't look the same. One guy said: 'You know, this just doesn't look like the rest of the ship.' I said: 'You're right.' We took them off and put on the metal bandits and now it looks like the rest of the ship. It was a visible response to somebody's concern. A cheap investment to gain fleet acceptance.

Strategic Influence

For the most part, program managers have limited positional power. Even with contractors, the terms and conditions of a contract are seldom sufficiently black and white to allow program managers to tell contractors exactly what to do. Program managers, therefore, need to be able to influence others in less overt ways. Even in the most straightforward, procedurally constrained situations, effective program managers skillfully employ influence strategies to help them achieve their objectives.

> One of the things that I think you have to do as a program manager is to make those guys understand your priorities. And the way you make them understand your priorities is by maybe exaggerating the amount of time that you spend on a particular point in the monthly meetings. Monthly meetings were a culture shock to this contractor but the key was having them. They learned it was like going to church on Sunday. It's part of the religion of the program: In the middle of every month, me and the boys show up for a little show-and-tell. They got used to it and the program began to run smoothly. After a while, I was able to cut back on those meetings.

When confronted by entrenched opposition, program managers use more direct means of influencing outcomes. They enlist the involvement of others who have the authority, legitimacy, expertise or political clout they lack. In the following budget situation, the program manager knew who to involve, at what point and why:

> I finally recognized that I needed heavy hitters with more influence and authority than I had, so I set up a meeting with the program executive office, the head of procurement, my staff, an attorney advisor, and the Army's contract policy expert. In other words, I had to go in there and literally stack the deck in terms of influence and independent representatives who would vouch for what I had said.

Interpersonal Assessment

Human resource problems of program management are most efficiently handled by managers who recognize and take into account the strengths, weaknesses and interests of others.

Most program managers inherit fully staffed offices. At the same time, effective program managers demonstrate little reluctance in moving people around within the program office to maximize using their skills. In a personnel management situation, a Navy captain enlists the aid of a commander he perceives as having both requisite skills and significant limitations:

> I had one guy, a commander, who was really good, not so much on the technical side but on the operational and administrative side, so I had him work with me to pull this thing together. Interestingly enough, he was one of the best leaders I had ever run across so I could use him to inspire people. A great manager, but not good enough to be captain.

Less effective program managers provide illustrations of what happens in situations where such commonsense is absent. For example, a deputy program manager responsible for fielding a piece of equipment in Korea described sending someone who had a difficult time relating to users and ultimately incurred costs of replacing the individual and having to personally fight the fire that individual had created.

Assertiveness

For many program managers, the normal linear chain of command becomes multidimensional. Resistance or opposition can come from many influential stakeholders. If they are to retain control of their programs, program managers must be willing to dig their heels in and withstand subtle and not-so subtle pressures from those with ostensibly more power. One program manager describes resistance experienced when he tried to provide on-site managers with greater authority in dealing with contractors by changing their titles:

> I got back to the base and told them how we were going to do it. There were a lot of senior people who jumped up and said, 'Now we're in for a real disaster. Nobody's in charge.' I said: 'Don't think for a moment nobody's in charge. Who cares what we call people. It only matters who's really in charge; not what you call people.' I knew that. They knew that. So who cares as long as the job gets done. I made everybody a manager and in 2 years we were able to field this system.

Effective program managers demonstrate this attribute when taking controversial positions in defense of important principles. A program manager, faced with a contractor not playing by the rules, proposes sending a letter to the contractor giving him 24 hours to submit a bid or be declared non-responsive:

> The legal world said that we might get a protest out of somebody. My answer was: 'So what?' I mean, the worst that can happen in a protest is that we go back and get our best and final when we get through, which is what you want to do now. But what we have done, even if somebody does protest, is: one, we dare them to protest; and two, we have told him you can't run us—you are going to have to play by our rules. That was my position. It didn't seem in our best interest to let this guy run us. I said: 'I'm not going to do it your way.'

Most senior officers have had line experience and seldom have difficulty being assertive with subordinates. Program managers, however, operate in an environment where responsibility and rank are not as congruent. Consequently, program managers must be prepared to use force of personality and confidence to make up for what they lack by way of rank.

Managerial Orientation

Effective program managers do not try to do everything themselves. Rather, they focus effort on building a program office team to handle the myriad decisions and details that epitomize even the smallest programs. An Air Force colonel, for example, clearly reveals his willingness to delegate detailed tasks:

> My role in the restructuring was to task the organization to work with the user and with the contractor to come up with this program. I never got involved with the details. That is not my job.

On the other hand, average program managers often describe their detailed involvement in issues that could easily have been handled by others, while major roadblocks like an absence of funding or unresolved strategic priorities remain relatively unattended.

Effective program managers master a few strategically important areas, leaving the mass of administrative and technical matters to subordinates. Since their activity requires absence from their offices for extended periods, program managers must be comfortable working through others. An Army colonel describes dependence on his subordinates:

> I've put a lot of faith in the civilians I have assigned as heads of my program management division, my technical management division, as well as in my deputy. I feel very confident that things will be kept going when I go down to OSD for a week or so. I trust my organization. I'm the one to get involved in the big issues where we have major problems.

Results Orientation

In an effort to focus activity and attention, effective program managers communicate specific, concrete goals for what they want to achieve. Results-oriented behavior is evidenced by the best program managers in establishing their priorities and objectives.

> In order to get this acquisition plan approved, I had to go to both houses of the Secretariat because I had both development money and production money. The boss and I had a bit of a bet on how much trouble I was going to have with the Secretariat on the acquisition plan. Let me just say that the acquisition plan cleared both sides of the Secretariat in 26 days which was unheard of by anyone in this building. I won a beer based on that one.

Critical Inquiry

With few exceptions, program managers must make decisions in situations where they have limited information. The best program managers stay on top of their programs by consistently going beyond the information given, probing for information, checking information, and asking the "what-if" questions.

> At this meeting, I asked the contractor what they knew about the subcontractor status. You know, where precisely are they? What are their plans to do this? With each answer, I would just ask one question deeper than that. When they started to stutter, I knew they were in trouble because I shouldn't be able to go that one-level deeper and ask a question they can't answer. My guys ought to be able to do that, but if I can do that, it irks me. Most primes don't like to get beat up. They get their feelings hurt when a PM can walk in and ask questions they can't answer. I said: 'You guys ought to be absolutely embarrassed that I can ask you questions you can't answer.'

Long-Term Perspective

The best program managers interpret events and contemplate key decisions from a broad mission perspective and with an eye toward future consequences of those events or decisions.

Top-performing program managers look ahead to deployment and support, and use that framework to shape immediate decisions:

> We don't make the missiles. We deliver canisters to weapon stations and the missiles and canisters come together there. But I saw a big mismatch. We were heading to a point where, although it was years away from happening, things would start to diverge. But action needed to be taken right then and there, so that in 1990 we would have enough canisters to go around and support the missile base. That was the driving factor in what I was doing.

Focus on Excellence

Standards of excellence set by the program manager become standards of the program's performance above and beyond engineering specifications and service requirements.

In this example, a Marine colonel had to choose between continuing delivery and issuing a waiver, or forcing the contractor to redo the product. Although he determined that the impact of the problem would not be major, he elected to have the contractor redo the product.

> The contractor was giving us inferior quality material. I think the contractor felt I would continue to let things be shipped. I made the hard decision and had to do a lot of explaining to the Marine Corps why we wouldn't be shipping for two months. But it had to be done right. So they went back and redid them and did them right.

Program managers, as noted earlier, depend upon staffs. It is a common refrain among superior program managers that one's staff has to consist of the highest quality people:

> The first thing you do is get the right people. My contractors have made an observation. They told me I don't have many people here but the ones I've got are terrific. And, that's exactly the way they were picked.

Innovativeness/Initiative

Program life cycles and the relatively short tenure of most program managers combine to ensure that program managers will repeatedly be faced with novel situations and decisions. At such junctures, program managers can rely on established practices or endeavor to find more effective solutions. Superior program managers challenge boundaries and accepted procedures by developing new ways to improve their programs.

Most program managers are seldom in a position to make significant technical contributions to their programs. Rather, it is often in contracting situations that the program managers demonstrate a flourish for innovativeness and creative problem solving. As an example, one program manager explains the benefits achieved in adopting an unorthodox acquisition strategy:

> I have in my own small way with this program taken a different approach to achieve an objective that would be unattainable in the traditional sense, because my community would never have the funding to buy. I just never would have been given the resources. But by doing it this way, I can get the system within affordable limits and I can give the tactical decision-maker a lot more value than he otherwise would have had.

Optimizing

Schedule slippages, engineering complications or software problems need not derail a program, provided the program manager is ready to quickly assess the situation, know alternatives, and choose a course of action wisely. Tough decisions involve not only the need to be decisive (to make a choice) but, more importantly, the ability to make that choice based on a careful analysis of the options.

Faced with a subcontractor's inability to perform and unwillingness to cooperate, one Air Force colonel continues to exert pressure while also seeking alternatives in the event of the worst case:

> I had been suggesting they might not be in a good position for Air Force contracts in the future if they didn't deliver on this. Also, I started to go out and look at alternatives. As a matter of fact, this afternoon I'm going to approve a small study. It's to see what the viability of another company is as an alternative to this thing. We're also going to use that as leverage to get the subcontractor working. We have some options, though not many. The alternative company does not precisely fit our parameters but comes close enough.

Systematic Thinking

Having a grasp on the big picture is seldom sufficient to become a successful program manager. Program managers have to be well organized to stay in control of the huge volume of details, procedural and administrative guidelines, and the inherent complexity of the weapon systems being developed. Most effective managers accomplish this by building and maintaining a well-organized and staffed program office.

Few things are left to chance for the program manager. In particular, briefings are approached with the knowledge that nothing would ensure success more than extensive, exhaustive, and thorough preparation:

> We started gathering the ammunition to go up the management chain. We were preparing all the documentation. I got very involved in analyzing for our people the implications of what was being said. I got a hold of all the various reports. I read every one, cover-to-cover, marked them up in red, brought in technical people, talked in detail on each one of the issues. I took input from everybody. We prepared the briefing and our counterpoints of what we felt were legitimate points.

Action Orientation

The best program managers are men of action. When problems are identified, swift action follows. When goals are impeded, alternatives are pursued to achieve them. Action in many instances amounts to persistence in pursuit of an objective. This program manager describes tactics used to get the contractor to capitalize the software development:

> I did everything from crying 'We can't afford it' to 'It's morally wrong what you're doing.' I knew that person had been using his production program for the last 10 years and had plenty of capitalization money available. I had my deck of cards, my old cards, and I just played them back and forth and finally after several days I just wore him down to a point where he said: 'Alright, we'll buy the things. Just get off our case.'

Effective program managers are sensitive to unnecessary delays. For people of action eager to get programs moving, the continuous and ongoing delays are a tremendous source of frustration. Most delays, however, are imbedded in the acquisition process. But, successful program managers do not become inured to these delays and countless obstacles:

> I have to show them that I have an executable program or they will throw me out. They will throw out the Army but I will be the lead guy going out the door. They will tell us to go back again.... I don't want to go back again. All I have done for the last year and a half is brief this program and defend it. I want to get on with building it.

In sum, effective program managers are doers, not caretakers, technicians or place holders.

Proactive Information Gathering

Many formal methods of monitoring program status exist to keep program managers up-to-date. The best program managers do not rely solely on institutionalized methods; they prefer to gather information first hand.

The best program managers believe in going to the source as opposed to depending on secondary sources or allowing the opposition to prepare a case. Within 10 days of assuming his new role as program manager, a colonel uncovered what appeared to be significant software problems. His response was not to dig anymore but to go directly to the source:

> The first thing I did was I called up the (contractor's) program manager. I suggested he come up for a visit and give me his view of the world.

In line with this aggressive approach, successful program managers demonstrate the ability to grasp quickly the essence of a situation. Entrenched in negotiations with a contractor who steadfastly claimed a $7 million expenditure for tooling, this program manager decided to do some sleuthing on his own:

> I went out to the plant a couple of times where they're building two prototypes and looked at their planning for the production line and talked to individuals on the floor and asked casual questions and I found out they had not started the planning for tooling at that point. So they couldn't have spent any money at all.

In many respects, the above brief descriptions and illustrations fail to adequately reflect the complexity inherent in program managers' jobs. Most program managers do, in fact, possess each of the above attributes to some degree. However, our study indicated that it is the outstanding program manager who is more likely to demonstrate more of these competencies in any given situation and hence perform more effectively.

In addition, significant differences exist even among effective program managers. The above competency model is not a "cookie cutter" prescription of what program managers ought to do. Some program managers demonstrated skills and styles appropriate to tough turnaround situations, while others demonstrated the skills needed to resolve delicate, external issues.

Given the above caveats, a few general statements about program managers can still be made. First and foremost, program managers are leaders. They see the bigger picture, work the important issues, and keep their team focused on fielding an effective system for the user. Their emphasis is primarily external and involves extensive relationship building and influence to resolve significant program issues.

Endnotes

1. Gadeken, O.C., "DSMC Studies Program Manager Competencies," *Program Manager*, Jan.-Feb. 1989, pp. 42-44.

2. Gadeken, O.C., "The Right Stuff: Results of DSMC's Program Manager Competency Study," *Program Manager*, Sep.-Oct. 1989, pp. 22-25.

TOTAL QUALITY MANAGEMENT DISCUSSION GUIDE

Robert W. Ball
Director of Publications

American business and the U.S. Government have been awakened by the growing demand for quality improvement. Quality watchwords such as *total customer satisfaction, best-in-class, and total quality management* have become commonplace as business and government adopt them along with accompanying attitudes.

The U.S. Government has established an annual quality award. In 1987, legislation establishing an annual United States Malcom Baldridge National Quality Award was signed into law by President Ronald Reagan. Its purpose is to promote quality awareness, recognize quality achievements of U.S. companies and publicize successful quality strategies. In November 1988, the President presented the first National Quality Awards and said, "You can take great pride in the knowledge that you are benefiting your customers, your companies and your country.... The more American Companies become obsessed with quality, the more we all stand to profit."

At the Defense Systems Management College, anything short of total quality is unacceptable. Other government agencies and many businesses have adopted this attitude, which is making visible progress.

Quality applies to all functions, all organizations and all employees. It must have long-term commitment with significant employee involvement. It must involve everyone in the organization.

At DSMC, the watchword is Total Quality Management. Several industries use the same words or a variation thereof. The 3M Corporation, for example, calls its program Managing Total Quality.

Recognizing that Total Quality Management requires the involvement and understanding of everyone in the organization, Jack Cohen, Director, of Total Quality Management Implementation for the McDonnell Douglas Missile Systems Company, prepared this Total Quality Management Discussion Guide for supervisors and leaders of small groups to facilitate discussions and understanding. We believe *Program Manager* readers will find the guide interesting and useful. Mr. Cohen may be contacted by writing to:

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McDonnell Douglas Missile Systems Company
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St. Louis, MO 63166

TOTAL QUALITY MANAGEMENT DISCUSSION GUIDE

QUALITY FAILURES

- THALIDOMIDE
- THREE MILE ISLAND
- BHOPAL
- THE CHALLENGER
- CHERNOBYL

QUESTION:
What Process failure caused each of these disasters?

ANCIENT CHINESE ADAGE

IF WE DON'T CHANGE DIRECTIONS SOON, WE ARE DOOMED TO END UP WHERE WE ARE HEADED

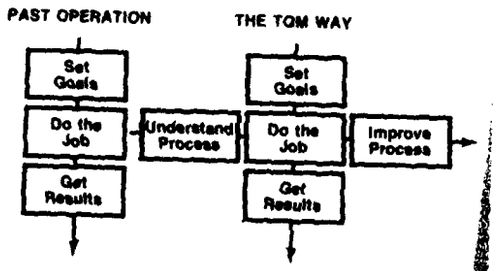
QUESTION:
Where was your organization headed?

PHILOSOPHY

PROMOTE CHANGE AMID ORDER WHILE PRESERVING ORDER AMID CHANGE

QUESTION:
Does change have to cause stress?

THE SIGNIFICANT DIFFERENCE



QUESTION:
Does this make sense? Is it easy to do?

DEFINITION

A PROCESS IS AN ACTIVITY THAT TAKES AN INPUT, ADDS VALUE AND PRODUCES AN OUTPUT

QUESTION:
Can you provide examples of processes with which you are involved?

ACCOUNTABILITY

EACH PROCESS MUST HAVE A SINGLE INDIVIDUAL HELD ACCOUNTABLE FOR THE SUCCESS, OPERATION AND IMPROVEMENT OF THE PROCESS AND ITS DATA

QUESTION:
Why?

CUSTOMER

THE OUTPUT OF A PROCESS GOES TO A CUSTOMER, EITHER INTERNAL OR EXTERNAL TO THE ORGANIZATION

QUESTION:
Can you provide examples?

CUSTOMER SATISFACTION

THE KEY TO SURVIVAL AND SUCCESS

QUESTION:
Do you agree?

FIT FOR USE

WHEN YOU RECEIVE SOMETHING:

IS REWORK REQUIRED?

IS DATA REENTRY REQUIRED?

DO YOU HAVE TO WASTE YOUR TIME BECAUSE IT'S DIFFICULT TO USE WHAT YOU RECEIVED?

QUESTION:
What do "YES" answers to any of the above mean?

What about things you pass on to internal customers or delivery to external customers?

PARTICIPATION

EVERYONE MUST PARTICIPATE IN THE IMPROVEMENT EFFORTS.

THE PERSON PERFORMING THE JOB IS THE BEST ONE TO IMPROVE IT.

QUESTION:
What is the payback for you and your team?

MEASUREMENT

SYSTEMS ANALYSIS PROVIDES A METHOD OF ANALYZING AN ORGANIZATION'S PROCESSES

QUESTION:
Do we need an analyst to help us measure our efficiency?

Do we need to bring in someone from outside our organization to establish measurements for us?

FINANCIAL MEASURES

INFORMATION SYSTEMS THAT ARE PREDOMINANTLY FINANCIAL IN NATURE ARE INADEQUATE TO SUPPORT CONTINUOUS IMPROVEMENT INITIATIVES

QUESTION:
What measurements do you want posted in your work areas?

WORTHLESS MEASURES

MEASURES ARE WORTHLESS IF THEY DO NOT CONTRIBUTE TO FURTHER IMPROVEMENT

QUESTION:
Are you currently making any worthless measures?

EMPOWERMENT

THOSE WHO ASK THE TOUGH QUESTIONS ARE WELL ON THE ROAD TO MAKING THE RIGHT DECISIONS

QUESTION:
What are your tough questions?

DATA

QUALITY PROCESSES DEPEND ON QUALITY DATA

QUESTION:
Are your written procedures, work instructions, drawings, etc., 100% correct?

"IT AIN'T BROKE"

CONTINUOUS IMPROVEMENT IS A WAR AGAINST HABIT

QUESTION:
Do you believe,
"If it isn't broke, don't fix it?"

IMPROVEMENT

IMPROVEMENT CAN BE MADE A HABIT

QUESTION:
Where do we go from here?

Every day newspapers are rife with articles about our relationships with our many Allies. Every year we develop hundreds of defense-related agreements with these same Allies. Until the Defense Systems Management College launched the Advanced International Management Workshop (AIMW) in December 1989, there was no education program anywhere for training our international negotiators in these types of agreements, even though some of the agreements potentially committed billions in defense expenditures!

There exists a common perception that we do not do very well in our negotiation of international defense agreements, especially those related to cooperative research and development. There is also a perception that we, unlike our Allies, time-after-time send different, untrained people to international negotiations. Also, unlike some of our Allies, the United States has never established permanent negotiating teams. While this may be attributable, at least in part, to the vast size of our defense establishment and our personnel systems, one way that we can address this problem is through education and training. This was recognized by personnel within the Office of the Secretary of Defense, which sponsored and funded the workshop development.

The Advanced International Management Workshop covers all aspects of the negotiation of international defense cooperation agreements, commonly referred to as Memoranda of Understanding (MOUs). While an MOU can be developed during any phase of a defense program, the AIMW focuses on the earlier research and development phases. Various aspects of an MOU are covered in the workshop—from the nature, process and procedures to specific negotiation issues such as project management, finance, industrial arrangements, contracting, acquisition strategies, technology transfer, intellectual property rights, third-party sales and transfers, information security, claims and liability, resolution of disputes, integrated logistics support, cost sharing, and work sharing.

Guest Lecturers

Perspectives on these international agreements are provided by guest lecturers from the Office of the Secretary of Defense Industrial & International Programs, Foreign Contracting, General Counsel, International Security, and Comptroller. Representatives from the Commerce Department provide their viewpoints on the domestic industrial base impacts of these agreements and the U.S. Office of Personnel Management addresses the role of the Congress. Sessions are conducted by experienced DSMC faculty on cultural sensitivity and international negotiation. Much of the course material and core lectures were developed under contract with Information Resources Technology, Inc., Falls Church, Virginia. The entire workshop development was conducted under the auspices of an advisory group comprising Office of the Secretary of Defense cosponsors and the highest level international action officers from the Army, Navy and Air Force.

The most exciting aspect of the workshop is the classroom exercises. Students are broken out into teams, provided a realistic international scenario, and directed to prepare specific sections of an MOU, such as financial provisions, third-party sales and transfers, disclosure and use of technical information, project management structure, work sharing, contractual arrangements, etc.

On the last evening of the workshop, teams are assigned national (allied) identities, and provided guidance from their governments regarding their negotiation positions. This guidance is not shared with the other teams. That evening a working dinner is held, and students begin the role-play associated with their assigned national identities. This is very realistic, as much negotiation in foreign countries actually occurs in a social environment.

Mock Negotiation

The next day a mock negotiation is conducted. Results are analyzed and critiqued by instructors, class, and outside experts. More than half of the students believed that this was the most valuable aspect of the course. An approval rating this high for an exercise is unprecedented.

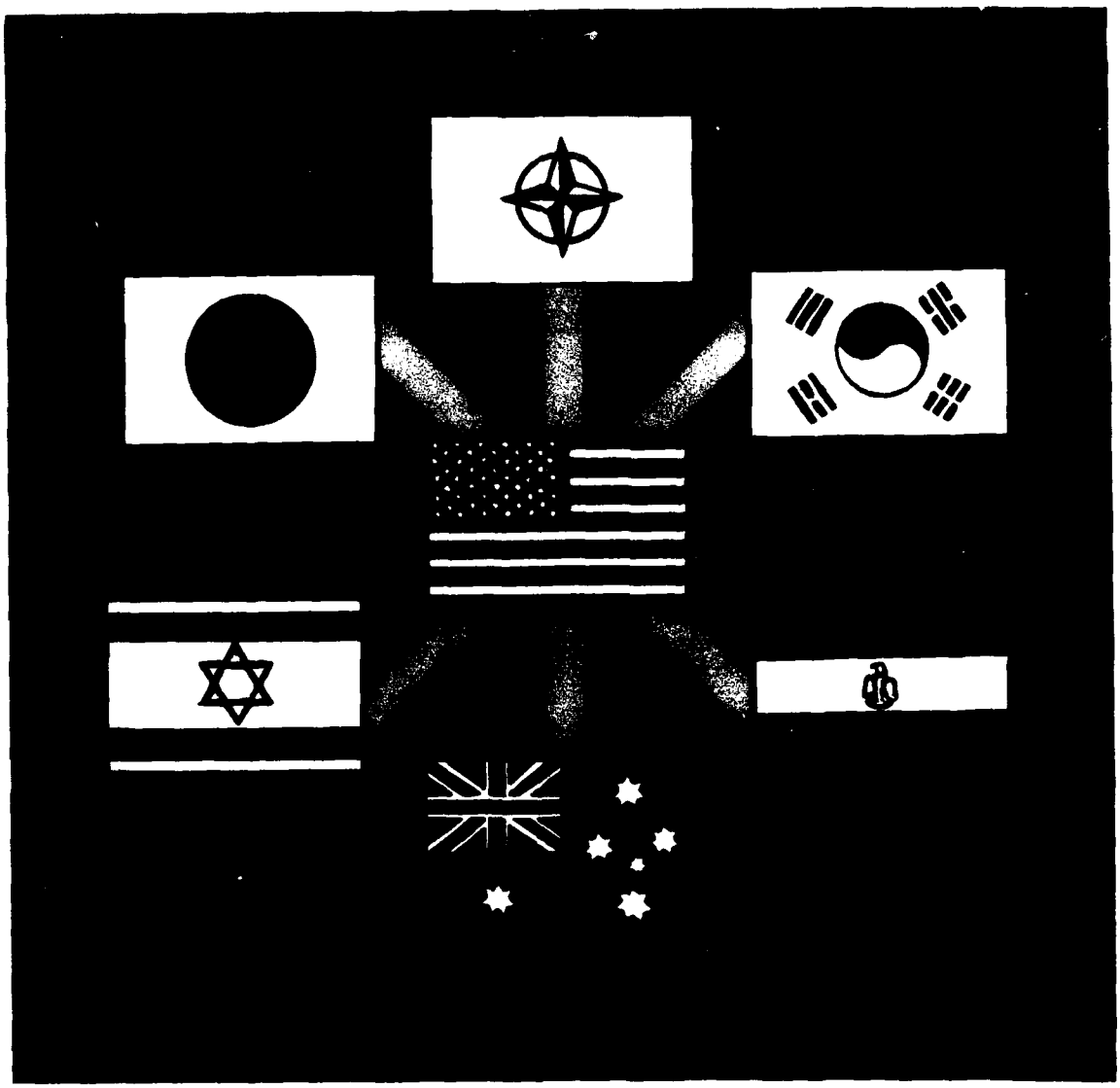
On January 10, 1990, the DSMC Commandant received a letter from Eleanor R. Spector, Deputy Assistant Secretary of Defense (Procurement). She stated: "My staff informs me that the success of the workshop exceeded their high expectations." She said, "I am pleased that the actions necessary to establish the AIMW as a regular course offering during fiscal year 1990 and beyond are well underway. I believe this course will play a significant role in improving the skills of United States negotiators of International Memoranda of Understanding."

Future plans for the Workshop are exciting. The first production offering is scheduled for June 18-22, 1990. Three regular offerings are planned for fiscal 1991 at DSMC.

Interested, potential students should submit applications quickly, as we expect these offerings to be as oversubscribed as the December pilot offering. The workshop is open to mid-level military officers, government civilians, and industry equivalents currently in or entering positions of responsibility in international or potentially international defense programs. Regrettably, we are unable to accommodate allied students at this time.

We plan to produce a guidebook on negotiation strategy for international defense cooperation MOUs. Your comments and inquiries are welcome.

Richard Kwatnoski



Explanation of AIMW Logo

The logo illustrates the flag of the United States in the center. Surrounding the U.S. flag are those of the organization/nations with which the United States can enter into defense cooperation agreements. The Nunn and Quayle Amendments facilitate and encourage cooperative programs with the NATO nations, Japan, Australia, the Republic of Korea, Israel, and Egypt.

Mr. Kwatnoski, a professor of engineering management at the Defense Systems Management College, is Course Director for the Advanced International Management Workshop.

ACQUISITION RESEARCH SYMPOSIUM A SUCCESS: ★P★L★A★N★S★

Joan Sable

The Defense Systems Management College (DSMC) and the National Contract Management Association (NCMA), Washington, D.C. Chapter, co-sponsored the well-received 1989 Acquisition Research Symposium at the Hyatt Regency, Capitol Hill, October 17-19, 1989. More than 200 acquisition personnel attended. Lieutenant Colonel Dave Scibetta, USA, DSMC, and Ms. Donna Ireton, NCMA, co-chaired the conference assisted by program co-chairs, Mr. Calvin Brown, DSMC, and Mr. Edwin Phelps, NCMA. Planning for the next symposium has begun with the dates set for June 4-6 1991. Requests for abstracts will be distributed soon (See p.13).

The symposium, latest in a series begun in 1972 and last conducted in 1985, was a dynamic forum for dialogue among key professionals working on vital issues facing the acquisition community. Attendees were senior officials, program managers, staff officers and researchers from the Department of Defense, federal civilian agencies, academia and industry. The theme, "Solutions to Today's Acquisition Problems," reflects the prevalence of innovation and change in the acquisition process. Papers written concerned latest research and development as documented by individuals involved in many aspects of the acquisition process.

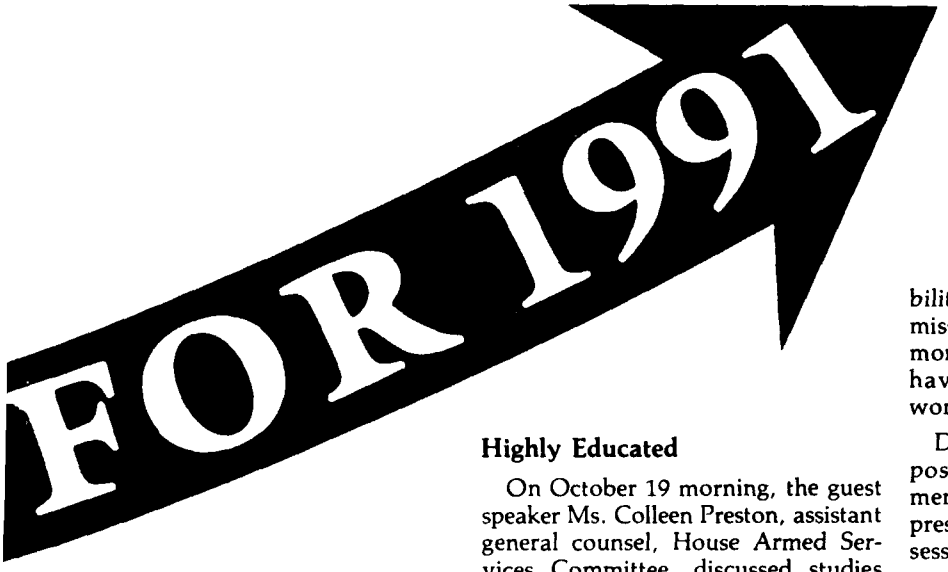
Major General Lynn H. Stevens, USA, DSMC Commandant, gave the opening remarks and introduced the keynote speaker, Mr. Norman R. Augustine, chief executive officer of Martin Marietta Corporation. Augustine applauded DSMC trips to Japan and Korea to study business management. Using charts, he demonstrated that the same research data can be interpreted in many ways. He said that many would say the acquisition process is broken today.

Mr. Augustine explained that to help correct this dilemma, there is need for high-quality research; inconsistent research is not helpful. Many research projects begin with good intentions but are distracted. When the study is done, the real work begins. There are problems to ineffective research: inept analysis or a bogging down in the elegance of research. Many times a researcher knows too much and when the information is presented, it becomes overwhelming. Research must be simple to be understood; therefore, it is important not to "snow" the audience. Research can deliver bad news, but let them call it like it is; the result of research is not an end in inself.

Be Consistent

Mr. Paul S. Stevens, partner of Dickstein, Shapiro & Morin, guest speaker, played a crucial role in preparing Secretary Richard B. Cheney's Defense Management Review (DMR) for President George Bush. Stevens noted the DMR purpose is to provide a consistent set of objectives. The DMR recommendations include: a detailed approach to managing the Department of Defense; a framework for senior management combined with participation and involvement at all levels; revising the threshold phase of Department of Defense planning and budgeting; delegating a high degree of authority to the Under Secretary of Defense for Acquisition; streamlining and reducing the cost of operations; markedly improving acquisition corps personnel, including establishing a professional corps in each Service, and special education and training for this corps to attract competent professionals to fill management positions; and, a high order of accountability.

The luncheon speaker, Mr. D. Kenneth Richardson, executive vice president, Hughes Aircraft Company, pointed out how far industry has come in making changes. Industry has been plagued with criticism, some deserved, some distorted—accusations of shoddy workmanship, undisciplined methods, cost overruns, unfulfilled performance promises, etc. Industry has worked hard to change its image, breaking out of the traditional way of thinking—downsizing, teaming, investing and accepting total quality management, which is a positive development. Richardson said Hughes has broken out of the traditional way of thinking and embraced benefit rather than worrying about risk. Upper and middle management learned to cooperate with customers and yield power to workers, which has meant a realistic relationship with management coupled with new responsibility and power.



Joint Logistics Commanders

The October 18 morning session began with a Joint Logistics Commanders Panel comprising General Bernard Randolph, USAF; General William Tuttle, Jr., USA; Vice Admiral Stanley Arthur, USN; Major General Charles Henry, USA; and Major General Robert Swarts, USAF. They fielded queries in a question and answer format. Major Ceneral Stevens moderated this discussion. These officers expressed desires to have military personnel remain in acquisition positions. Each Service has professional military officials with valuable operational experience; hence, they "know how the system works." Questions concerned research topics, weakening of the government procurement work force, and possibility of a simplified procurement statute. Popular discussion topics like total quality management and decline of the industrial base were debated.

Mr. James Goggins, executive director, NCMA, gave a speech prepared by W. Gregor Macfarlan, vice president of Education and Certification, NCMA. The speech concerned acquisition research and the focus it must have on people and the process.

The October 18 afternoon guest speaker was Mr. Jack Davin, assistant postmaster general, U.S. Postal Service. Transient trends in his industry are the buy-and-supply global economy and the technology explosion of information management.

Highly Educated

On October 19 morning, the guest speaker Ms. Colleen Preston, assistant general counsel, House Armed Services Committee, discussed studies regarding the acquisition work force. One particular study was done by Nicholas Mavroules (D-Mass). His study shows the acquisition work force to be highly educated; procurement professionals are better educated than employees in any other federal agency.

Mr. Robert E. Pursley, president and chief executive officer of the Logistics Management Institute, noted there are many congressional drawbacks to the Defense Management Review. His speech was titled "The Acquisition Recipe: A Missing Ingredient." The public believes the defense acquisition process is not working, and that there has been a deterioration since 1986. The crucial ingredient lacking is leadership, and this is the key formula for effective reform. Since we need to focus on leadership, the constant attention to reorganization is a distraction we must supress. The long-term trend is toward unification, a modification, away from the decentralized role of the military departments. Acquisition research topics that NCMA and DSMC should study include whether reforms have been evenly implemented, and whether the organizational changes work.

Effective Warranties

Dr. Jacques S. Gansler, senior vice president, The Analytic Sciences Corporation, beginning his closing address with a discussion of warranties, said they require sound management judgment to be effective. Warranties must be announced before the design so that they can be incorporated to assure the system does not fail. Warranty cost is trivial; we will reap rewards of reliability and improved design. It is permissible for contractors to make money from warranties since they have marketed guarantees that work.

During the first two days of the symposium, research papers judged meritorious by a committee were presented and discussed in breakout sessions. In these sessions, authors presented papers on topic areas including Project Management, Pricing and Cost Estimating, Financial Management and Budgeting, Systems Acquisition, Competition, Research and Development, Automation, Human Resources, Warranties, Total Quality Management, Acquisition Process/Methodology, Productivity, Commercial Practices, and Incentives. Titles included: "Spending Instability and Acquisition Costs," (Abellera); "Exchange Rates and Product Cost," (Frisch); "Acquisition Research: The Past is Prologue," (Judson); and, "Can Award Fee Contracts Substantially Improve the Acquisition Process?" (Kennedy). Presenters from the Defense Systems Management College were Mr. Henry Alberts, Dr. Franz Frisch, Mr. James Abellera, Mr. Miguel Otegui, Mr. Michael Krause and Mr. Forrest Gale. Lieutenant Colonel Bruce Sweeny and Commander Charles Perkins, 1988 DSMC Research Fellows, participated.

Volume of 75 Papers

Accepted papers and abstracts were printed in a large volume. The DSMC and NCMA selected 75 papers for inclusion in the book of proceedings; Of the 75 papers, 33 papers were selected for presentation. This volume is available upon request to DSMC, ATTN: DRI-R, Fort Belvoir, VA 22060-5426.

Ms. Sable is assigned to the Research Directorate at the Defense Systems Management College. She had an active role in planning the Acquisition Research Symposium.

TO TESTIFY OR BRIEF UNDER ADVERSITY

Robert A. Warren

A program manager and staff will give hundreds of information and decision briefings to diverse audiences like the Congress, the military services, foreign governments, industry, government agencies, auditors and investigators, interest groups, associations, and the media. Most will be to friendly or neutral audiences; however, because of litigious and combative trends in society, some will be given to audiences whose motives are opposed to the program and the military. How the program management team handles communications in the face of adversity and hostility affects not only the program but individual and organizational reputations. My premise is that the program management team is a collection of experts who need to understand the tools and mechanisms relating to success in this environment.

Preparing to Testifying

It may be self evident but, if you are going to testify, know why you are there, your role and your position. Staff the position thoroughly and in writing if possible. Clear it through public or congressional affairs channels. Don't let the position get stale, especially if the decision-making environment is changing rapidly. Today s "sheet of music for everyone" may be tomorrow's basis for major conflict.

The role of the program management team is not as clear as the charter and organization chart indicate. Core cost, schedule, and performance issues may be well defined, but program margins ebb and flow. The personal and professional leeway available is a function of the management process and also of other people's confidence in you and your team. An order to "Do your best" is not the same as "Don't goof up."

It is not unusual for a person to be pressed into service because of convenience, availability, or less than a charitable reason. If you are to testify or brief under adversity, find out why and position yourself to achieve the best outcome. The situation may not permit a programmatic win, but you can lose less by representing yourself and your organization in a professional and dignified manner.

Have a Strategy. In an adversarial setting, you are not just answering questions. There are major themes and ideas permeating the give and take of inquiry, and you are expected to represent the themes effectively. How you respond is as important as what you say, and there are different choices and methods to convey a message. Tell the truth but make sure you can maintain flexibility, which comes from understanding pros and cons of the situation, and sensitivities and hostilities of interest groups. Avoid absolutes, certainties and tightly drawn answers, especially in the initial portion of adversarial discussions. This will give you time to refine your thinking without appearing to be evasive or neglectful.

Pre-briefs Are Important to the Preparation Process. Where possible, get biographies on all players involved in the testimony or briefing, and seek information on personal interests and advocacy positions. The more you know about motivations of people the easier it is to brief and converse. Many program managers have failed because they promote self rather than audience interests.

Use murder boards. Involve public affairs and government attorneys, but do not depend on them for the position to be taken.

Before an interrogation, chit chat with people asking questions. Avoid the subject but probe for experience, intelligence and skills in interviewing techniques.

Mr. Warren teaches in the Simulation Department, DSMC, lecturing on "Expert Witness" tools and techniques.

Stage Setting Is an Important Part of Interview. Admiral Hyman Rickover, USN, was well known for making interviews pressure packed by creating a climate of physical, mental and emotional discomfort. You can combat techniques designed to increase your discomfort. Select the location or check it out. Before and during interrogation, adjust the immediate environment to suit yourself: If the microphone is in the wrong place, move it; if lights are blinding, request a change; if the testifying or briefing process will take a long time, be sure plenty of water is available; and predefine and take food, stretch, and comfort breaks.

The military uniform is a powerful symbol. When wearing it, you project living history and elicit sterotypes. Use the uniform wisely and with discretion. During the Iran-Contra hearings, Lieutenant Colonel Oliver North, USMC, wore his uniform. Think of the clarity and impact of his image.

This may be a radical notion but consistency often counts more than accuracy. A hostile interviewer looks for outright mistakes or weaknesses, and tries to create weakness by picking on inconsistency or the appearance of inconsistency. The prepared statement, key points to be inserted during discussions, and closing remarks should essentially deliver the same message. If the situation or position is complex, use notes, ready references, a strategy book, and available, knowledgeable support people. Care is indicated here because a skillful interrogator will use slavish adherence to a predefined position to make you look unprepared and to create a disjointed impression of your testimony or presentation. Remember, new information may change your opinion even though you may not be in a position to respond to it. Be reasonable because the accuracy of facts and opinions may be in dispute.

Under Pressure

Identify Audience. One common mistake is to confuse the hostile interviewer with what is otherwise a neutral, somewhat disinterested audience. A jury in a courtroom and people watching television at home are presumed to be neutral unless otherwise advised. A mishandled interrogation process may work in your interest even if you make mistakes, fumble for words or seem uncomfortable.

If you know the audience to be hostile, acknowledge it. Maintain your dignity by not responding in kind to bullying or insulting tactics. In most adversarial situations, it is best to keep answers short and to the point. This minimizes exposure by limiting your opponent's information—gathering opportunities.

Interviewer, Not Audience, Controls Questions. If the situation is competitive and combative, use your answer to control facts, reflect professional opinions and organization positions, and control pace and dynamics during discussions. Don't rush or be rushed. Anticipate where a line of questioning is going but answer the question at hand. A good attorney will often ask half a question and pause for an impatient interviewee to finish it. Above all, listen: with interest and with a commitment to give your best answer.

It Is Important to Establish Credibility Early On. If possible, state your professional, organizational, educational and experiential credentials, or use an early question to show the depth and breadth of your knowledge. Be succinct. Do not use a question that is part of the dispute to show knowledge because an audience can, and will, confuse controversy with credibility. Don't talk down to an audience. Don't use jargon or abbreviations. Use familiar examples or analogies to make your point.

You Will Make Errors of Omission and Commission. You will give less than the best answer to a question. Correct your errors without being defensive. Questions are repeated in different ways during interrogations, so improve poor answers the next time. Attempts to justify a misstatement or recover from a mistake magnify the error, cause confusion and suggest deception. You are giving "air time" to an opposite position.

Adversarial Hearings or Briefings Have Substantive Emotional Content. Anger is usually inappropriate if you are trying to be convincing as it tends to give a go-for-broke image. If you work for the Department of Defense, it can give you the reputation of being a hot head. If you are being abused, righteous indignation bordering on anger may be effective; however, you are probably better off taking a break. Embarrassment is often unavoidable and may generate sympathy, especially if handled extremely well, with professionalism and a little humor, or extremely poorly, like resorting to tears. Don't tell jokes, be sarcastic or flippant. Folksy analogies can be acceptable because serious situations have their lighter moments.

Adversarial Environment Is at Times Hard to Believe. Various games are used to increase pressure. Opponents may try to exhaust (no food, water or breaks), deceive, confuse, change inquiry pace and timing, intimidate, and threaten. Corporate, programmatic, professional and personal survival on both sides of the issue may be involved. A truly adversarial situation is a free-for-all and nearly anything can happen.

To handle pressure, be a leader. When on the defensive, keep answers short and to the point. When on the offensive, be expansive to achieve the greatest gain for your position but be controlled and wary. When the situation is an even give-and-take, wait for an opportunity to take the offensive. Be patient. You will lose battles, but you want to win the war. Think of the adversarial communication contest as a chess and poker game combined.

Questions as Interrogation Tools

Questions have different meanings in adversarial settings. They are used to solicit facts and opinions *and to create a variety of effects.* A good interrogator can confuse, obtain contradictions, and elicit a negative impression of the program and organization by damaging your appearance, even though you are factually correct.

Repetitive Questions are among the most common forms of attack. Attorneys will repeat a question with dif-

ferent nuances and word combinations to obtain contradictions and annoy. You can control this by defining positions in your terms. You can note that questions are repetitive, and the slight shades in meaning are irrelevant or relevant in a way that only you define.

Bind Questions have more than one interpretation or contain internal contradictions. For example: Do you think it's unpatriotic to disagree with some alternative position? Many complications can be associated with the answer. A good interrogator will use these questions constantly if you are on the defensive, or will use them tactically to create instant confusion or the appearance of evasion. You can deal with this type of question by noting problems and inherent contradictions, or you can answer a different but related question. The latter approach may not be possible if your opponent persists. Further, you may now have two questions to answer rather the initial bind.

Open Ended Questions with limited scope usually take the form of "What do you think about....?" The purpose is to obtain unexpected disclosure or expand the interview discussions. You can be in danger here if you say too much and instantly chart new waters. Be cautious and limit the answer to prior-stated positions, facts or opinions.

Hypothetical Questions relate to issues and facts in the dispute but imply either a different interpretation of the situation or introduce an entirely new situation. The purpose is to compare opposing positions or focus on weakness in the logic of your position. Answer with precision, note implied contradictions and explain what is reasonable. In doing this, you boost credibility.

How-Would-You-Do-This Questions invite on-the-spot design of your position and are dangerous. This is intended to expose limits of your thinking. It becomes a trap of increasingly complex and detailed questions intended to embarrass you at the limits of your knowledge. To control this, indicate the inappropriateness of doing months and years worth of analysis in a few moments. Change the subject or, if time is limited, discuss minutia to pressure the interviewer to cut you off.

Out-Of-Context Questions misrepresent your position or change the meaning of prior discussions. The purpose is to destroy position logic, confuse and disarm and give the appearance of contradictions. The good part is they may signal desperation. To control such questions, respond clearly and stay in control. This may be difficult in the face of the unethical tactics this type of questioning implies. Indicate to interviewer and audience that you are being misquoted and show differences between the misquoted position and the position you intend to advocate.

Significant But Irrelevant Questions have nothing to do with the subject at hand, or cross position and factual line. Asking you to compare money for a new aircraft carrier with help for the homeless is ax-grinding or an attempt to negate your position. Control such questions by noting you are not there to debate issues belonging at presidential and congressional levels. You could "no comment" such questions, but this may appear harsh and unsympathetic.

Mushy, Vague and Thoughtless Questions may indicate a fishing expedition, pause, or indicate poor interrogator preparation. To control them, ask for clarification. This puts the ball in the court of the interviewer who must respond quickly to maintain the audience's confidence.

Answer as Control and Closure Mechanisms

Unless time is predefined or limited, it is difficult to finish an inquiry or stop a line of questioning. There are, however, techniques to control inquiry directions, signal closure, or drain energy from the interrogation process.

Lack of Knowledge and Need for More Think Time Is Useful for Closure. No one knows everything or can instantly provide perfect answers to complex questions. The natural tendency is to press on through ignorance. Such an act only exposes it. "I don't know" and an expression of "willingness to go further" are satisfactory.

Lots of Yes and No Answers Without Embellishment will drain energy from an interrogation. An interviewer is depending on an information exchange. Yes and no do not describe the reasons for choices. If you can persist in not explaining or adding information, the interview will end or the interviewer will start a more productive line of inquiry.

Inject a Folksy Anecdote, a disarming tactic signaling an interview shift, may disrupt the interviewer's thought processes and line of questions. If not adept, the interviewer may stumble and immediately lose credibility. A good interrogator will proceed only when the situation is in control.

Ask for a Break for your personal comforts or to confer with attorneys and support people. Don't be bullied into answering just one more question, or even the question at hand, if you need a break.

The Interview Is Over signals time is up and there is nothing more to be discussed. Use this tactic if you feel good about your answers and can only hurt yourself by further discussion. Do not become talkative and defeat yourself. Get off the stage.

Refuse to Answer When Being Abused Or Misrepresented, but don't get angry. It is best to take a break to regain your composure. Further, an interviewer, in the heat of battle, might not recognize or intend abuse.

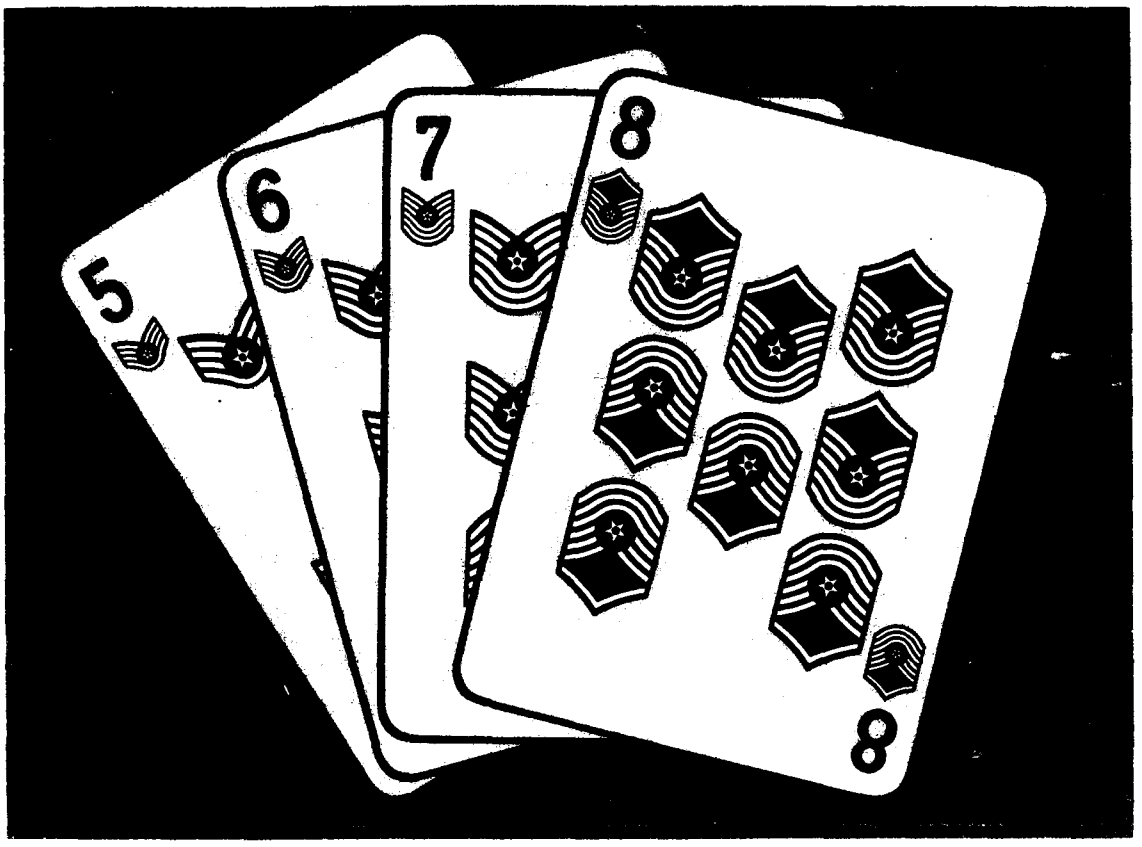
None of these tactics are guaranteed. The interview, first and foremost, is in the control of the questioner.

Final Remarks

If you are going to be a good expert witness or briefer, listen well and state fundamentals of your position often. Don't get in the rut of testifying or briefing to an absolute; situations and facts change. Emphasize strenghts but acknowledge limitations to maintain credibility. Be a reasonable human being. Show you are a leader through the quality, clarity and consistency of your answers.

WORKING WITH A FULLER DECK

NON-COMMISSIONED OFFICER'S ROLE IN ACQUISITION PROCESS



Senior Master Sergeant Kenneth M. Hitz, USAF

Arriving at my present duty assignment, I was astonished at the number of people employed in the acquisition career field. Being a senior non-commissioned officer (NCO) I noticed I was a minority in this highly important business of Weapons System Procurement.

The acquisition force as a whole employs United States Air Force officers to function mainly as system engineers. Also, government Civil Servants perform matrix functions of logisitcs, configuration, accounting, contracting, manufacturing and important aspects of acquisition management. I noticed contractor personnel performing management duties throughout the system program office where apparent manning vacancies existed. This seemed to me to be a reasonable solution to filling these important vacancies by employing qualified personnel but at a high cost to the United States Air Force.

The question that came to mind was: Is there another solution to this apparent serious employment problem?

My purpose here is to convince you that NCOs *can and should* play important and direct roles in the acquisition process.

Presently, NCOs by classification are not assigned to positions within the acquisition career field, which is structured for officers only. Non-commissioned officers are involved only with acquisition sporadically throughout the acquisition process by representing the *user* at various meetings leading up to the procurement process. I believe that the non-commissioned officer can do *more* for acquisition *if given a chance*. To understand this ongoing problem we will look at the problem in three successive steps.

First, and foremost, we need to understand the history of the NCO role in the acquisition process.

Second, we will take a close-up view of the problem as stated earlier.

Third, we will look at a possible solution to this ongoing problem.

Acquisition of Public Interest

The subject of acquisition (i.e., procurement, contracting, defense management) has been given exposure by the media. You cannot pick up a newspaper or magazine today without finding an article about acquisition.

We, members of the United States Air Force, can agree that weapons system acquisition is vital to our mission accomplishment and national defense. Acquisition caught the public interest because of the billions of dollars spent each year on procurement. The public heard the stories about $400 hammers, $850 aircraft armrests, and the $7,600 coffee pot for the C-5 aircraft. I will not argue that we do or do not need acquisition reform, nor will I argue that the system is perfect. I contend that within any system changes can be made for the good of that system.

In 1986, President Ronald Reagan chartered the Blue Ribbon Commission on Defense Management headed by former Deputy Secretary of Defense David Packard. The report took more than a year to complete. One of the most interesting findings was the lack of "user participation" in the acquisition process.

"The Air Force spends a third of its budget, more than $30 billion, on development and production of weapon systems. Program managers must possess a broad experience base, i.e., maintenance and operations. These people are hard to get and hard to keep. Their experiences make them attractive to the private sector, where they can usually earn more money,"quoting Major General Ronald Yates. He said that the job requires "an intimate understanding of the user's requirements and an ability to translate those requirements into what we can do with our hardware and software.

With the addition of a prefix, NCOs could be identified as acquisition managers, qualified to perform important tasks within the acquisition career field.

In an article, Dr. Hisachi Shinto, President of Nippon Telegraph & Telephone, said "Many U.S. companies have ceased the practice of initially assigning young engineering graduates to the production line, where they would gain invaluable experience...."

Several years ago General Curtis Lemay, then Air Force Chief of Staff, wrote that the most important need of the Air Force is...people. Too often in these days of supersonic aircraft, hypersonic rockets, satellites and outer space probes, the key element tends to be overshadowed and forgotten—the *people* who develop, build and operate the new technology.

General Lemay said the Air Force would be short 2,000 scientific and engineering officers in 1964. I feel these data are pertinent today. Since the 1960s, the Air Force found it difficult to recruit and retain scientific and engineering personnel. With this in mind and given todays upheaval in the defense acquisition management profession, the problem of a sufficiently manned, highly trained and stable work force is a serious problem. If we are to stabilize and train this work force to be highly qualified acquisition managers, something has to be done soon. To stabilize the work force and properly train engineers in acquisition management, additional resources will be needed to fill vacancies in the acquisition career field. As with any new acquisition, more people are needed in the beginning than at the end of the acquisition process. Who better to utilize and support this need than users of that potential weapons system?

The Acquisition Pyramid

Again, quoting Major General Yates, "Operational experience is an *integral* brick in the acquisition pyramid." He chaired the commission that developed the Acquisition Management Career Development Program and repeatedly has expressed concern in the need for operational experience (i.e., user).

The present Officer Classification Guide, AFR 36-1, uses several career fields in the system acquisition management process. Now looking at the Airmen Classification Guide, AFR 39-1, this guide does not have any specific career field for acquisition management, nor does it address this subject. The closest possibility would be career Specialty Code 65190, the contracting career field. This career field is used mainly for civil engineering projects and, as such, is not suited for acquisition as we know it today in Air Force Systems Command.

With the problem of a diminishing work force in the engineering profession, causing instability within the acquisition career field, it is my opinion that the solution to this ongoing problem is evident. Using qualified NCOs to support weapons systems acquisition would greatly improve the acquisition process as a whole. I do not propose to delete, change or undermine a career field that has been the primary responsibility of the officer corps. But, I do suggest that NCOs could supplement this void in the acquisition management career field. With the addition of a prefix, NCOs could be identified as acquisition managers, qualified to perform important tasks within the acquisition career field. It is apparent that getting the user involved early-on in the acquisition process is highly important for successful procurement as is emphasized with programs like BLUE-2 and R&M 2000 (reliability and maintainability).

Non-commissioned officers with related backgrounds, maintenance experience and sufficient education could be nominated by the using command and accepted by the acquisition command to work in the acquisition process during early stages of the process.

Bringing Values to Process

An NCO with a 7-9 skill level has probably been in his particular career field more than 12 years. This operator and maintenance experience applied to the acquisition process during early stages would be of considerable value to the process. The person who is going to operate or maintain a system could lend valuable assistance during the determination of need, establishment of the system requirements, prototyping, early testing stages, competition phase, and the all-important baselining during critical design review (CDR).

Who would better understand needs and requirements of todays Air Force mission than NCOs working in the trenches?

The basic recruit in the Air Force today comes in with a higher degree of maturity than his predecessor, holds a high school diploma, more than likely has attended college, and possesses a positive attitude toward the Air Force. Non-commissioned officers are subjected to weeks of technical schooling and years of on-the-job training. The average NCO has worked on several different systems related to his specialty. Recent statistics taken from graduates of the Senior NCO Academy (SNCOA) indicate the average NCO has more formal education today than in the past. More than likely an NCO chosen to work in the acquisition management career field would be around 30 years of age, have 10-12 years time in Service, possess a 7-9 skill level in his specialty, acquired more than a year of college credit, and attended several levels of professional military education.

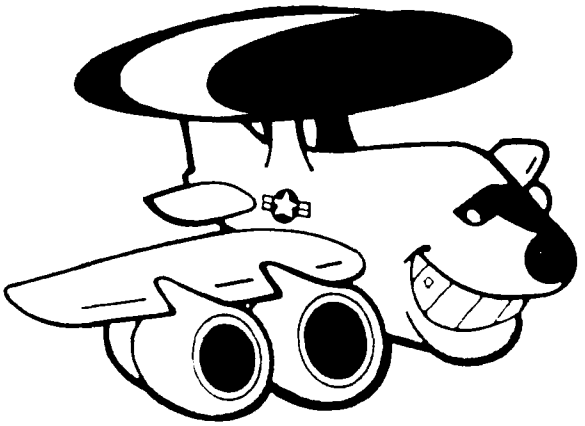
These non-commissioned officers could be recruited as volunteers for a new acquisition early-on in the process. They could fill out an Air Force form similar to an Airmans Performance Report Fact Sheet used by most commands, or a one-page resume. The acquisition command would hand-pick candidates for particular jobs within acquisition management: quality control, training, configuration, manufacturing, program control, test and evaluation, finance, logistics and engineering. These NCOs would fill the void wherever needed. They would be given schooling in the fundamentals of acquisition and in their areas of future responsibility before a controlled tour of duty.

These NCOs would be able to contribute immeasurably in areas pertaining to maintenance, operations, system limitations, needs and wants, etc. I have heard several times during 23 years as a computer technician numerous people saying things like: "If they would have only designed it this way" or "Why didn't they do it that way instead?"

Making It Work

It is obvious that for this solution to work the using command must, first, be willing to give up several highly valued assets for several years. Second, the using command must pick exceptional people to do these types of jobs required for acquisition management. Third, the gaining command must utilize these people where they can do the most good.

You only have to look at AFR 39-1, *Airman Classification Guide*, to see the basis of an acquisition career field (65190). Who would better understand needs and requirements of todays Air Force mission than NCOs working in the trenches? Maintenance and operator experience is critically important in managing acquisition programs. It is a proven fact that NCOs are qualified to perform various duties within the acquisition career field now open only to officers.



It is not my suggestion to build a brand new career field for NCOs in acquisition management. I profess that a prefix denoting acquisition career field experience and education would be sufficient to manage this resource of personnel. To aid in the selection, the Manpower Personnel Center (MPC) would keep records on individuals with this prefix and would file information like military training, formal education, system experience, professional military education, and command and staff experience.

Panel at DSMC

Recently, several senior NCOs met at the Defense System Management College (DSMC) to address issues for present and future program managers from the customer's viewpoint. First and foremost we need to really listen to people operating, repairing and maintaining U.S. weapons systems. We need to schedule time and budget money to get key people out of the office and into the field. A senior enlisted billet shifted from operational forces to a program office could more than pay for itself by providing years of hands-on experience in the development of new or improved systems and equipment. This was the opinion of the panel made up of 5 senior NCOs.

To ensure that NCOs perform and progress at a high level of proficiency once in the acquisition career field, a model program could be developed for them like that used for officers and civilians in acquisition management. The AFSC has a system in effect, AFR 70-2, AFSC Sup 1. This "mirrored" system could cover new NCOs in the acquisition career field and the few already in place.

Conclusion

When one gathers all facts, surely history will indicate that the NCO (i.e., users, operators, maintainers) have been ignored in the acquisition process from the beginning. It is apparent that it is a career field for officers. There have been token gestures to include the NCO in the acquisition process. Anyone doing fact-finding on acquisition management can tell that additional personnel are needed in the acquisition process. It is clear that NCOs have a valid input to the process. I feel the solution to the problem is clear and simple: employ NCOs in the acquisition process from the beginning. For this solution to be effective all user and procuring commands must support this solution.

I do not profess sweeping changes to include the non-commissioned officer in the acquisition management career field, nor are any needed. Implementation of this solution would be relatively simple by just adding another prefix. For this solution to be effective the user must be committed to the idea of procuring a weapons system that is cost effective, within schedule, state-of-the-art and, foremost, maintainable and operable. The NCOs do have something to contribute to the acquisition career field. If properly picked, trained and assigned they would and could function in a highly professional manner.

Involving the user early-on in the acquisition process is smart business. Utilizing the non-commissioned officer in the acquisition process is even smarter.

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(Continued from page 15)

to anticipated questions or statements. Using computers to instruct demands time for analysis and design of the lesson. The subject-matter expert and computer programmer painstakingly define objectives, content, and possible alternative tracks to students' responses during the lesson.

If we put this thought together with the absence of inhibitions mentioned previously, people communicating by computer with superiors may send copies to people they would not ordinarily contact. Thus, the communication process is broadened.

Final Thoughts

We would be remiss to discuss communication today without discussing technologies. It is important to note that technologies discussed here are only tools or devices to enhance or improve communications. Foundations and principles governing effective communication must be present whether or not we use technology. Effective communication will not occur because we use the telephone or watch television; we must remember we are only using a different medium to send or receive a message. Communication is a complex two-way process, which requires a message, transmitter, medium, receiver and feedback. Efficient application of writing, speaking, listening, reading and questioning skills are critical.

The synergism of communication skills, technology and the human creative spirit can impact positively the effectiveness of our information transmittal. This is increasingly evident as society grows in knowledge and recognizes problems demanding better ways to communicate.

Professor Acker is a senior member of the Research Directorate staff and Dr. Ainsley is a Professor of Educational Technology, Education Research Directorate, Department of Research and Information, Defense Systems Management College. *Much material in this article will be in the second edition of Professor Acker's book* Skill in Communication: A Vital Element in Effective Management *planned for publication this year. See article "Skill in Communication: Something Every Manager Should Possess," in this* Program Manager *for details.*

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BOOK REVIEW

Albert M. Bottoms

ACQUIRING MAJOR SYSTEMS CONTRACTS:
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Marshall H. Kaplan
(Wiley Interscience. John Wiley & Sons, Inc. New York, 1988. 233 pp.)

The secret to winning is not losing, according to Marshall Kaplan, in closing his fast-paced, informative, hands-on, how-to book that should be in the library of every person whose livelihood depends upon winning requests for proposals. It should be available to individuals involved in the generation and scoring of acquisition documents at federal, state, and local government levels.

This book complements much material in the Program Management Course at the Defense Systems Management College. The Appendices provide detailed descriptions of many sections of standard RFP and acquisition regulations drawn from NASA and the Air Force that are hardly mentioned in the DOD core courses in defense systems acquisition.

Dr. Kaplan, experienced veteran of the proposal generation process, has a straightforward message to proposal teams of huge aerospace corporations and to small business vendors. It is: Exercise disciplined planning, and leave nothing to chance. In the main body of his text, he leads the reader through step-by-step activities that must occur *before* the formal RFP is issued, and the maelstrom that engulfs the proposal team after the formal RFP is received. Dr. Kaplan weaves the story of the responsibilities of everyone from corporate management above the project team to artists, production specialists and word processors. The key words are commitment, discipline and planning.

One reason the book complements tools usually available to government acquisition professionals is that Dr. Kaplan provides insights into the continuous competition for resources existing within even the largest firms. Too frequently, it seems, government rule-setters or special pleaders are oblivious to relationship between their insatiable appetites for documentation and the cost of proposal preparation—resources that come directly out of corporate profits and are not chargeable. Job security for members of the proposal teams is tied directly to winning. In the larger sense, corporate survival in this age of austere defense budgets is also tied to winning.

Dr. Kaplan uses a hypothetical bid on a very large space program by an equally large vendor (there is an irresistible temptation to guess which program and which company for the example is a montage from real life). In his narrative of events that must occur in recruiting the proposal team, securing corporate management approval to make the bid and securing people and financial resources that will be needed and so on through the entire process, Dr. Kaplan provides sample organization charts, sample agendas for planning meetings, sample schedules, etc. He introduces techniques used to integrate the bid and proposal efforts in a complex bid such as the use of themes, storyboards and, even, conference room walls!

Without descending into cynicism, Dr. Kaplan presents an honest and frank account of the importance of knowing the customer and the public and private agendas that senior individuals in source selection may have. He points out the extreme importance of meticulous compliance with all aspects of the RFP and provides formal structures within the proposal team to ensure compliance. He outlines review processes and "front-end" processes of evaluating likely competitors. One of the first things that must be done is to round out capabilities and capacities with teammates or sub-contractors. These suggestions are in "how to" forms.

The essence of the message is that assuming a bidder has a good idea, is strong technically, and can field a credible management team, then failure to exercise care and discipline in every aspect of the preparation of the proposal can only weaken chances of winning. It is the detailed instructions of how to avoid throwing away advantage that give this book a unique value. Exhortation is replaced by example.

Dr. Kaplan is an aeronautical engineer and specialist in space flight systems. The careful layout of the various streams of information that must come together *on time* and with winning quality reflects the discipline of science. This book is a distinct contribution to the technology of acquisition and is particularly important for its concern with technologies that the successful bidder must master.

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